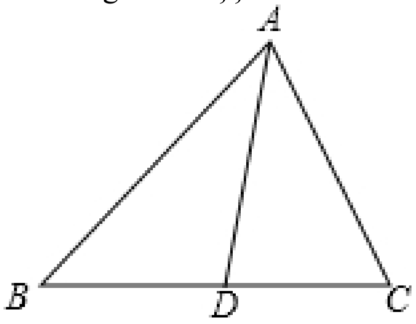
Auxiliary_samples-1000

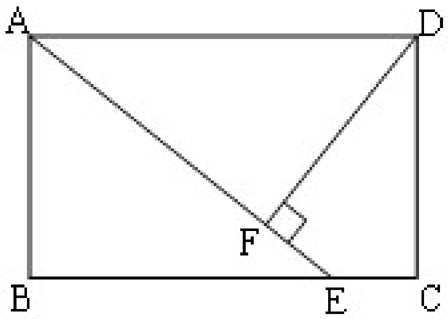
1, topic: As shown in the △ABC, the AD its bisector Proof: $ {{S} _ {\ vartriangle ABD}}: {{S} _ {\ vartriangle ACD}} =AB: AC $. #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"003098C1CE944094999C6A4BC2E74DC3_Q_1.jpg","coordinates":{"A":"-12.00,8.00","B":"-16.00,4.00","C":"-10.00,4.00","D":"-12.65,4.00"},"collineations":{"0":"A###B","1":"A###D","2":"B###D###C","3":"C###A"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleRelation:△ABC,AngleBisectorRelation{line=AD,angle=∠BAC, angle1=∠CAD, angle2=∠BAD},ProveConclusionRelation:[Proof: EqualityRelation{S_△ABD)/S_△ACD=(AB)/(AC)}]

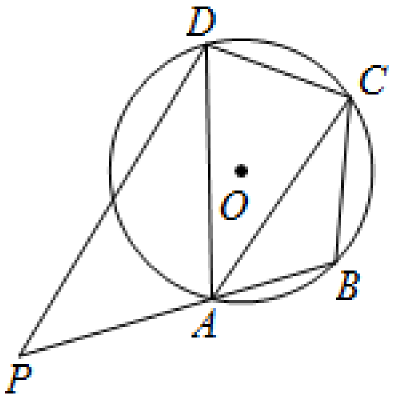
2, topic: As shown, the rectangular ABCD $ $, the point E is on the BC $ $ little $, AE =AD, DF \ bot AE, $ Pedal as $ F., Prove $ $: DF =DC $ <. img>



graph:
{"stem":{"pictures":[{"picturename":"1000005461_Q_1.jpg","coordinates":{"A":"-9.95,5.00","B":"-9.82,-2.17","C":"3.05,-1.93","D":"2.92,5.24","E":"0.87,-1.97","F":"-0.96,-0.79"},"collineations":{"0":"A###F###E","1":"B###E###C","2":"A###B","3":"A###D","4":"C###D","5":"D###F"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: RectangleRelation{rectangle=Rectangle:ABCD},PointOnLineRelation{point=E, line=BC, isConstant=false, extension=false},EqualityRelation{AE=AD},LinePerpRelation{line1=DF, line2=AE, crossPoint=F},ProveConclusionRelation:[Proof: EqualityRelation{DF=CD}]

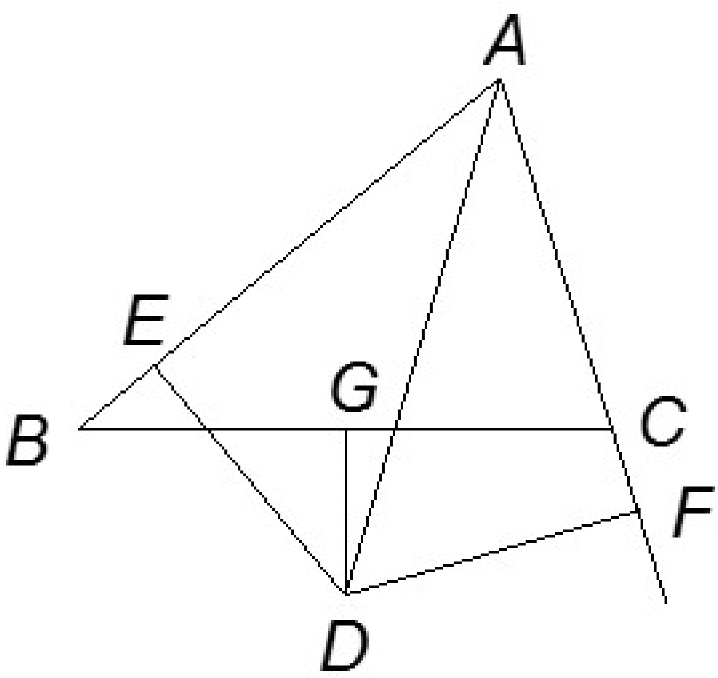
3, topic: FIG, ABCD ⊙O is within the quadrilateral, DP // AC, extension lines cross at point BA P. Proof: $ AD \ cdot DC =PA \ cdot BC $ #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000060803_Q_1.jpg","coordinates":{"A":"5.84,4.01","B":"7.11,4.34","C":"7.64,7.15","D":"5.28,7.87","E":"2.59,3.17","O":"6.00,6.00"},"collineations":{"0":"E###D","1":"D###C","2":"C###B","3":"B###A###E","4":"A###C","5":"A###D"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"A###B###C###D"}]}],"appliedproblems":{}},"substems":[]}

NLP: InscribedShapeOfCircleRelation{closedShape=ABCD, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}},LineParallelRelation [iLine1=DP, iLine2=AC],LineCrossRelation [crossPoint=Optional.of(P), iLine1=DP, iLine2=BA],ProveConclusionRelation:[Proof: EqualityRelation{AD*CD=AP*BC}]

4, topic: FIG, $ \triangle ABC $ in, AD bisecting $ \angle BAC $, $ DG\perp BC $ and bisects BC, $ DE\perp AB $ to E, $ DF\perp AC $ to F #% # (.? 1) Description $ $ BE =CF2 reason of;? #% # (2) if $ AB =a $, $ AC =b $, seeking AE, BE long.

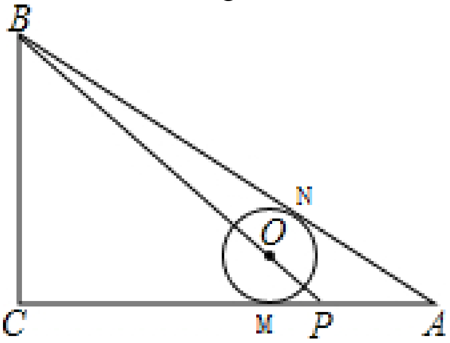


graph:
{"stem":{"pictures":[{"picturename":"065C15CF9977441B837306BA5B715915_Q_1.jpg","coordinates":{"A":"-11.00,6.00","B":"-16.00,3.00","C":"-9.00,3.00","D":"-12.50,-0.67","E":"-15.05,3.57","F":"-8.38,2.07","G":"-12.50,3.00"},"collineations":{"0":"A###D","1":"A###B###E","2":"A###C###F","3":"B###C###G","4":"D###E","5":"D###G","6":"D###F"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"subste

ms":[]}

NLP: TriangleRelation:△ABC,AngleBisectorRelation{line=AD,angle=∠CAE, angle1=∠CAD, angle2=∠DAE},LinePerpRelation{line1=DG, line2=BC, crossPoint=G},LineDecileSegmentRelation [iLine1=DG, iLine2=BC, crossPoint=Optional.of(G)],LinePerpRelation{line1=DE, line2=AB, crossPoint=E},LinePerpRelation{line1=DF, line2=AC, crossPoint=F},EqualityRelation{AB=a},EqualityRelation{AC=b},Calculation:(ExpressRelation:[key:]AE), Calculation:(ExpressRelation:[key:]BE),ProveConclusionRelation:[Proof: EqualityRelation{BE=CF}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]AE)} ,SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]BE)}

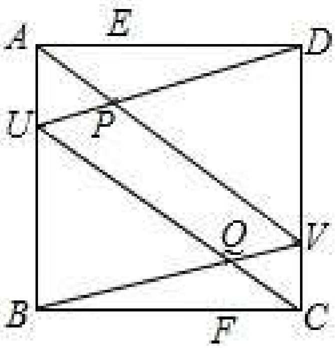
5, topic: As shown in the △ABC, ∠C =90 °, AC =8, AB =10, the point P on the AC, AP =2, if the center of the line segment BP ⊙O, and with ⊙O AB, AC tangent, tangent point are N, M, seeking ⊙O radius. #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000052563_Q_1.jpg","coordinates":{"A":"0.35,-4.10","B":"-7.65,1.90","C":"-7.65,-4.10","P":"-1.65,-4.10","O":"-2.65,-3.10","M":"-2.65,-4.10","N":"-2.05,-2.30"},"collineations":{"0":"B###C","1":"A###N###B","2":"B###O###P","3":"A###P###M###C"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"M###N"}]}],"appliedproblems":{}},"substems":[]}

NLP: CircleCenterRelation{point=Q_0, conic=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}},TriangleRelation:△ABC,EqualityRelation{∠BCM=(1/2*Pi)},EqualityRelation{AC=8},EqualityRelation{AB=10},PointOnLineRelation{point=P, line=AC, isConstant=false, extension=false},EqualityRelation{AP=2},PointOnLineRelation{point=Q_0, line=BP, isConstant=false, extension=false},LineContactCircleRelation{line=AB, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, contactPoint=Optional.of(N), outpoint=Optional.absent()},LineContactCircleRelation{line=AC, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, contactPoint=Optional.of(M), outpoint=Optional.absent()},圆的半径：CircleRelation{circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]MO)}

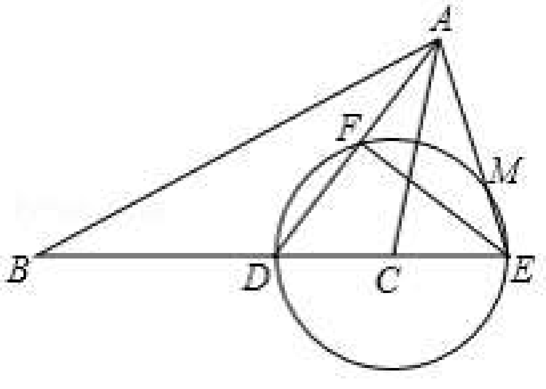
6, topic: FIG, $ ABCD $ is a square side length of 1, U, V are the AB, the point on the CD, AV DU and intersect at the point P, BV and CU at point Q. quadrangular seeking $ maximum PUQV $ area.



graph:
{"stem":{"pictures":[{"picturename":"0908A274E21F47299A8E3015080A0BFA_Q_1.jpg","coordinates":{"A":"-9.00,5.00","B":"-9.00,1.00","C":"-5.00,1.00","D":"-5.00,5.00","U":"-9.00,4.00","V":"-5.00,2.00","P":"-8.00,4.25","Q":"-6.09,1.68"},"collineations":{"0":"B###C","1":"A###B###U","2":"A###D","3":"A###P###V","4":"Q###B###V","5":"Q###C###U","6":"D###V###C","7":"D###P###U"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: known conditions QuadrilateralRelation {quadrilateral =PUQV}, EqualityRelation {S_PUQV =v_0}, SquareRelation {square =Square: ABCD}, EqualityRelation {AB =1}, LineCrossRelation [crossPoint =Optional.of (P), iLine1 =AV, iLine2 =DU], LineCrossRelation [crossPoint =Optional.of (Q), iLine1 =BV, iLine2 =CU], the maximum value: (ExpressRelation: [key:] v_0 [v_0 =v_0]), SolutionConclusionRelation {relation =maximum of: (ExpressRelation: [key:] v_0 [v_0 =v_0])}

7, topic: $ (2013 • $ Hohhot) FIG. $, $ Is the AD $ \ bigtriangleup ABC $ angle bisector to the center point C $, $ radius circle with the CD cross the BC $ $ extended line at point $ E, $ pay $ the AD $ at points $ F, $ pay $ the AE $ at a point $ M, $ and $ \ angle B =\ angle CAE, EF: FD =4:.? 3 $ #% # $ (1) $ Prove:? point F is the midpoint of the AD $ $ a; #% # $ (2) $ $ demand \ \ angle AED $ value of cos; #% # $ (3) $ If $ BD =10, $? seeking long radius $ CD $.



graph:
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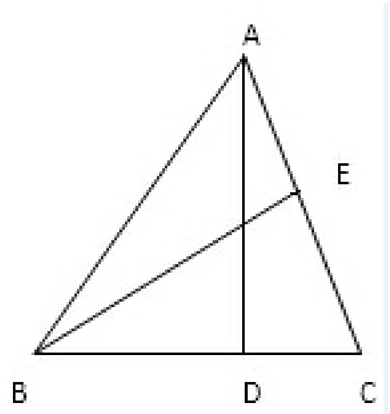
NLP: RadiusRelation{radius=CD, circle=Circle[⊙C]{center=C, analytic=(x-x_C)^2+(y-y_C)^2=r_C^2},

length=null},TriangleRelation:△ABC,LineCrossCircleRelation{line=BC, circle=⊙O_0, crossPoints=[E], crossPointNum=1},LineCrossCircleRelation{line=AD, circle=⊙O_0, crossPoints=[F], crossPointNum=1},LineCrossCircleRelation{line=AE, circle=⊙O_0, crossPoints=[M], crossPointNum=1},EqualityRelation{∠ABD=∠CAM},EqualityRelation{(EF)/(DF)=(4)/(3)},AngleBisectorRelation{line=AD,angle=∠BAC, angle1=∠CAD, angle2=∠BAD},Calculation:(ExpressRelation:[key:]cos(∠CEM)),EqualityRelation{CD=v_1},EqualityRelation{BD=10},ProveConclusionRelation:[Proof: MiddlePointOfSegmentRelation{middlePoint=F,segment=AD}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]cos(∠CEM))}

8, topic: Given: FIG, $\triangle ABC$ in, the AD is high, BE midline, and $\angle EBC =30°$ Proof: $AD =BE$



graph:
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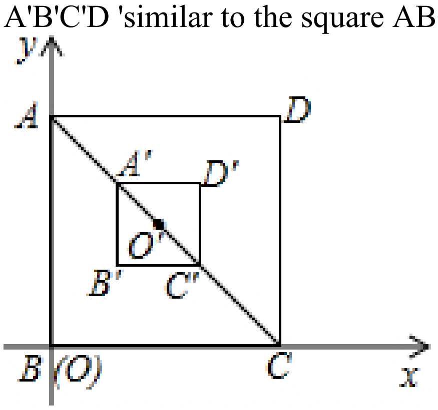
NLP: TriangleRelation:△ABC,EqualityRelation{∠DBE=(1/6*Pi)},LinePerpRelation{line1=AD, line2=BD, crossPoint=D},MidianLineOfTriangleRelation{midianLine=BE, triangle=△BAC, top=B, bottom=AC},ProveConclusionRelation:[Proof: EqualityRelation{AD=BE}]

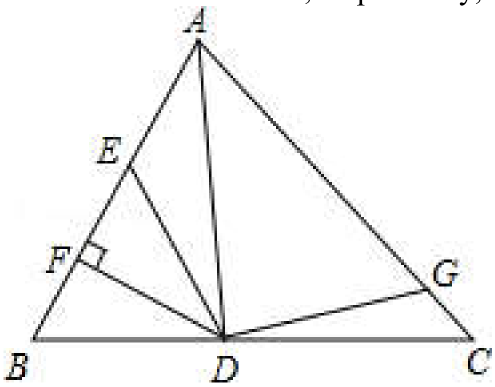
9, topic: FIG square ABCD sides BC, AB respectively, the x-axis in the plane rectangular coordinate system, the y-axis positive axis, square A'B'C'D 'and the midpoint of the AC square ABCD is O 'seems to be the center of the bit pattern, known $AC =3 \sqrt {2}$, if the point a' of coordinates (1,2), find the square A'B'C'D 'similar to the square ABCD ratio. #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000061304_Q_1.jpg","coordinates":{"A":"0.00,3.00","B":"0.00,0.00","C":"3.00,0.00","D":"3.00,3.00","A'":"1.00,2.00","B'":"1.00,1.00","C'":"2.00,1.00","D'":"2.00,2.00","O":"0.00,0.00","O'":"1.50,1.50"},"collineations":{"0":"A###B","1":"A###O","2":"B###C","3":"O###C","4":"C###D","5":"D###A","6":"A'###D'","7":"A###O###C'###A'###C'","8":"D'###C'","9":"C'###B'","10":"B'###A'"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP:
MiddlePointOfSegmentRelation{middlePoint=O',segment=AC},SquareRelation{square=Square:ABCD},LineCoincideRelation [iLine1=BC, iLine2=StraightLine[X] analytic :y=0 slope:0 b:0 isLinearFunction:false],LineCoincideRelation [iLine1=AB, iLine2=StraightLine[Y] analytic :x=0 slope: b: isLinearFunction:false],SquareRelation{square=Square:A'B'C'D'},SquareRelation{square=Square:ABCD}, EqualityRelation{AC=3*(2^(1/2))},PointRelation:A'(1,2),Calculation:(ExpressRelation:[key:]r_1),SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]r_1)}

10, topic: As shown, the AD is the bisector of △ABC, DF⊥AB, pedal point F, DE =DG, △ADG and △AED areas 50 and 39, respectively, the area required △EDF #. % # <img>



graph:
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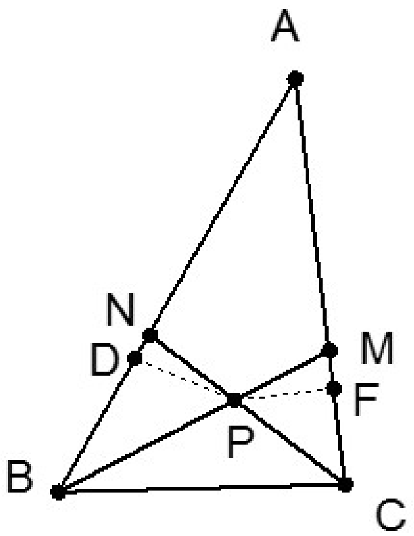
NLP: EqualityRelation{S_△DEF=v_0},TriangleRelation:△ABC,LinePerpRelation{line1=DF, line2=AB, crossPoint=F},EqualityRelation{DE=DG},EqualityRelation{S_△ADG=50},EqualityRelation{S_△ADE=39},Calculation:(ExpressRelation:[key:]v_0),AngleBisectorRelation{line=AD,angle=∠EAG, angle1=∠DAG, angle2=∠DAE},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]S_△DEF)}

11, topic: FIG known, $ △ABC $ angle bisector BM, CN intersect at point P. Proof: $ ∠BAC $ bisector also passes through the point P.



graph:
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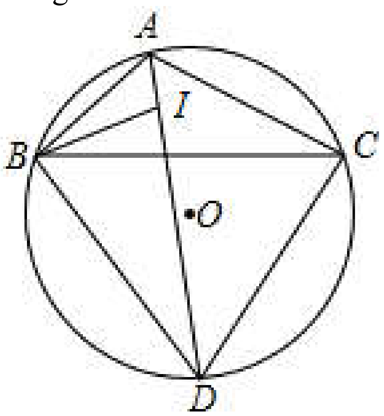
NLP: TriangleRelation:△ABC,LineCrossRelation [crossPoint=Optional.of(P), iLine1=BM, iLine2=CN],AngleBisectorRelation{line=BM,angle=∠CBN, angle1=∠MBN, angle2=∠CBM},AngleBisectorRelation{line=CN,angle=∠BCM, angle1=∠BCN, angle2=∠MCN},ProveConclusionRelation:[AngleBisectorRelation{line=PA,angle=∠MAN, angle1=∠MAP, angle2=∠NAP}]

12, topic: as shown, a circle O circumcircle of △ABC, ∠BAC with ∠ABC bisectors intersect at the point the I $ $, $ extend in the AI $ O circular cross points D, connected to BD, DC #. % # (1) confirmation $ BD =DC =DI $; #% # (2) If the radius of the circle O 10cm, ∠BAC =120 °, △BDC seeking area #% # <img>.



graph:
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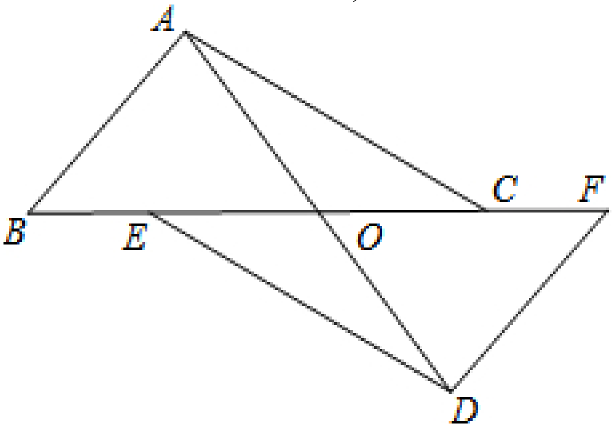
NLP: AngleBisectorRelation{line=AI,angle=∠BAC, angle1=∠BAI, angle2=∠

CAI},AngleBisectorRelation{line=BI,angle=∠ABC, angle1=∠ABI, angle2=∠CBI},InscribedShapeOfCircleRelation{closedShape=△ABC, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}},LineCrossCircleRelation{line=AI, circle=⊙O, crossPoints=[D], crossPointNum=1},SegmentRelation:BD,SegmentRelation:DC,EqualityRelation{S_△BCD=v_5},RadiusRelation{radius=null, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, length=Express:[10]},EqualityRelation{∠BAC=(2/3*Pi)},Calculation:(ExpressRelation:[key:]v_5),ProveConclusionRelation:[Proof: MultiEqualityRelation [multiExpressCompare=BD=CD=DI, originExpressRelationList=[], keyWord=null, result=null]],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]S_△BCD)}

13, topic: Given: FIG, AD, BF intersect at point O, the point E, C in the BF, BE =FC, AC =DE, AB =DF Proof: #% # AO =DO, #% # BO =FO. <img>



graph:
{"stem":{"pictures":[{"picturename":"1000061418_Q_1.jpg","coordinates":{"A":"5.00,8.00","B":"3.00,5.00","C":"9.00,5.00","D":"9.00,2.00","E":"5.00,5.00","F":"11.00,5.00","O":"7.00,5.00"},"collineations":{"0":"A###B","1":"B###E###O###C###F","2":"F###D","3":"D###E","4":"A###C","5":"A###O###D"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: LineCrossRelation [crossPoint=Optional.of(O), iLine1=AD, iLine2=BF],PointOnLineRelation{point=E, line=BF, isConstant=false, extension=false},PointOnLineRelation{point=C, line=BF, isConstant=false, extension=false},EqualityRelation{BE=CF},EqualityRelation{AC=DE},EqualityRelation{AB=DF},ProveConclusionRelation:[Proof: EqualityRelation{AO=DO}],ProveConclusionRelation:[Proof: EqualityRelation{BO=FO}]

14, topic: the quadrangle ABCD, ∠B =∠D =90 °, ∠BAD ∠BCD and the inner (or outer) were bisector AE and CF #% # as AE, CF are interior angle bisector time. (FIG. 1), not difficult to prove AE∥CF follows:. #% # ∵ ∠BAD + ∠BCD =∠1 + ∠2 + ∠3 + ∠4 =360 ° - (∠B + ∠D), ∠B =∠D =90 °, ∠1 =∠2, ∠3 =∠4, #% # ∴ 2 (∠2 + ∠4) =360 ° -180 ° =180 ° #% # ∴ ∠2 + ∠4 =90 ° #% # and ∵ ∠B =90 °, ∴ ∠2 + ∠5 =90 °, the ∠4 =∠5. #% # ∴ AE∥CF. #% # (1) when the AE, CF are outside corner (Figure 2), how to AE and CF positional relationship bisector? given proof. #% # (2) when is the interior angle bisector AE, CF is the exterior angle bisector time (Figure 3), and invite you to explore AE CF positional relationship, and gives proof. #% # <img><img><img>

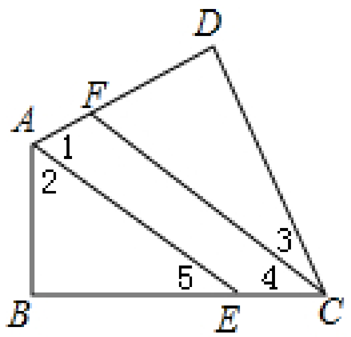


图1

graph:
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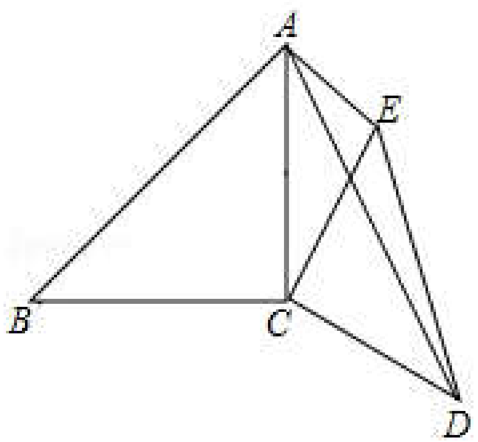
NLP: Know:QuadrilateralRelation{quadrilateral=ABCD},MultiEqualityRelation [multiExpressCompare=∠B=∠D=(1/2*Pi), originExpressRelationList=[], keyWord=null, result=null],SegmentRelation:AE,Proof: LineParallelRelation [iLine1=AE, iLine2=CF],MultiEqualityRelation [multiExpressCompare=∠BAD+∠BCD=∠1+∠2+∠3+∠4=(2*Pi)-(∠B+∠D), originExpressRelationList=[], keyWord=null, result=null],MultiEqualityRelation [multiExpressCompare=∠B=∠D=(1/2*Pi), originExpressRelationList=[], keyWord=null, result=null],EqualityRelation{∠1=∠2},EqualityRelation{∠3=∠4},MultiEqualityRelation [multiExpressCompare=2*(∠2+∠4)=(2*Pi)-(Pi)=(Pi), originExpressRelationList=[], keyWord=null, result=null],EqualityRelation{∵*∠B=(1/2*Pi)},EqualityRelation{∠2+∠5=(1/2*Pi)},EqualityRelation{∠4=∠5},LineParallelRelation [iLine1=AE, iLine2=CF],SegmentRelation:AE,LineRoleRelation{Segment=AE, roleType=ANGULAR_BISECTOR},JudgePostionConclusionRelation: [data1=AE, data2=CF],JudgePostionConclusionRelation: [data1=AE, data2=CF]

15, topic: FIG known ∠ACB =∠DCE =90 °, AC =BC =6, CD =CE, AE =3, ∠CAE =45 °, the length AD seeking #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000081326_Q_1.jpg","coordinates":{"A":"0.00,3.00","B":"-3.00,0.00","C":"0.00,0.00","D":"1.94,-1.06","E":"1.06,1.94"},"collineations":{"0":"A###D","1":"A###C","2":"A###B","3":"A###E","4":"B###C","5":"C###E","6":"E###D","7":"C###D"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

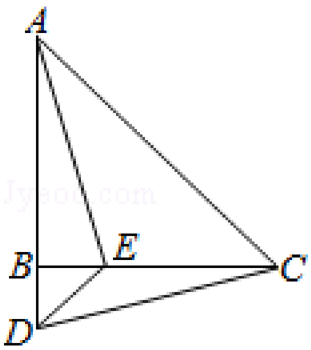
NLP: EqualityRelation{AD=v_0},MultiEqualityRelation [multiExpressCompare=∠ACB=∠DCE=(1/2*Pi), originExpressRelationList=[], keyWord=null, result=null],MultiEqualityRelation [multiExpressCompare=AC=BC=6, originExpressRelationList=[], keyWord=null, result=null],EqualityRelation{CD=CE},EqualityRelation{AE=3},EqualityRelation{∠CAE=(1/4*Pi)},Calculation:(ExpressRelation:[key:]v_0),SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]AD)}

16, topic: FIG known segments AB, CD intersect at point O, AD, CB extended line at point E, OA =OC, EA =EC Proof:. ∠A =∠C #% # <img >

graph:
{"stem":{"pictures":[{"picturename":"1000030734_Q_1.jpg","coordinates":{"A":"-11.00,7.00","B":"-6.20,5.00","C":"-5.00,7.00","D":"-9.80,5.00","E":"-8.00,2.00","O":"-8.00,5.75"},"collineations":{"0":"A###D###E","1":"A###O###B","2":"C###O###D","3":"C###B###E"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: SegmentRelation:AB,SegmentRelation:CD,LineCrossRelation [crossPoint=Optional.of(O), iLine1=AB, iLine2=CD],LineCrossRelation [crossPoint=Optional.of(E), iLine1=AD, iLine2=CB],EqualityRelation{AO=CO},EqualityRelation{AE=CE},ProveConclusionRelation:[Proof: EqualityRelation{∠DAO=∠BCO}]

17, topic: As shown in the △ABC, AB =CB, ∠ABC =90 °, D AB extension line of that point E on the edge of the BC, and BE =BD, connected AE, DE, DC #. % # (1) test Description: △ABE≌ △CBD; #% # (2) if ∠CAE =30 °, the degree of seeking ∠BDC #% # <img>.

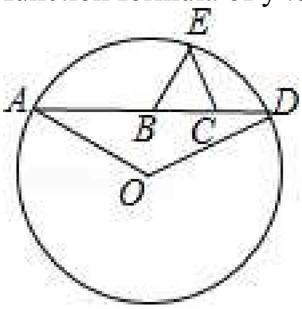


graph:
{"stem":{"pictures":[{"picturename":"1000029171_Q_1.jpg","coordinates":{"A":"3.00,7.00","B":"3.00,3.00","C":"7.00,3.00","D":"3.00,2.00","E":"4.00,3.00"},"collineations":{"0":"C###A","1":"C###D","2":"A###E","3":"D###E","4":"A###B###D","5":"B###E###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[{},{"questionrelies":"1"}]}

NLP: TriangleRelation:△ABC,EqualityRelation{AB=BC},EqualityRelation{∠ABE=(1/2*Pi)},PointOnLineRelation{point=D, line=AB, isConstant=false, extension=true},PointOnLineRelation{point=E, line=BC, isConstant=false, extension=false},EqualityRelation{BE=BD},SegmentRelation:AE,SegmentRelation:DE,SegmentRelation:DC,EqualityRelation{∠CAE=(1/6*Pi)},Calculation:AngleRelation{angle=∠

BDC},ProveConclusionRelation:[Proof: TriangleCongRelation{triangleA=△ABE, triangleB=△CBD}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]∠BDC)}

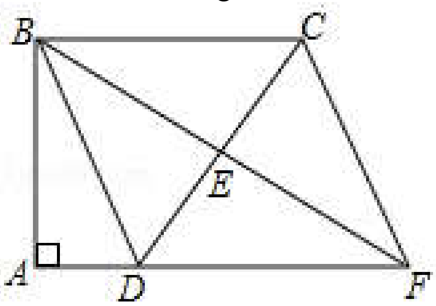
18, topic: FIG., A, B, C, D followed by four points a straight line, $ BC =2 $, $ \triangle BCE $ equilateral triangle, $ \odot O $ over A, D, E three and $ \angle AOD =120 ° $. Provided $ AB =x $, $ CD =y $, seeking function formula of y to x.



graph:
{"stem":{"pictures":[{"picturename":"1000024939.jpg","coordinates":{"A":"-4.33,2.50","B":"0.00,2.50","C":"2.68,2.50","D":"4.33,2.50","E":"1.34,2.82","O":"0.00,0.00"},"collineations":{"0":"A###O","1":"O###D","2":"D###B###A###C","3":"E###C","4":"E###B"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"A###E###D"}]}],"appliedproblems":{}},"substems":[]}

NLP: PointRelation: A, PointRelation: B, PointRelation: C, EqualityRelation {BC =2}, RegularTriangleRelation: RegularTriangle: △BCE, PointOnCircleRelation {circle =Circle [⊙O] {center =O, analytic =(x-x_O) ^ 2+ (y-y_O) ^ 2 =r_O ^ 2}, points =[A, D, E]}, EqualityRelation {∠AOD =(2/3 * Pi)}, EqualityRelation {AB =x}, EqualityRelation {CD =y}, the relationship between the expression: DualExpressRelation {expresses =[Express: [y], Express: [x]]}, the relationship between the SolutionConclusionRelation {relation =expression: DualExpressRelation {expresses =[Express: [y], Express: [x]]}}

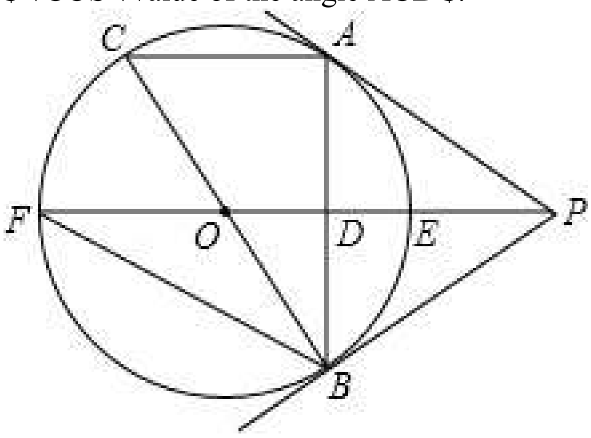
19, topic: As shown, the quadrangle ABCD, ∠A =∠ABC =90 °, AD =1, BC =3, E is the midpoint of the side CD, and BE is connected with the extension line of AD extension at point F. connecting CF #% # (1) Proof: BDFC quadrilateral is a parallelogram;% # # (2) known CB =CD, a quadrangular seeking area BDFC #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"A1AEFF80AD0F4B48860835EBD0452987.jpg","coordinates":{"A":"-14.00,3.00","B":"-14.00,5.80","C":"-11.00,5.80","D":"-13.00,3.00","E":"-12.00,4.40","F":"-10.00,3.00"},"collineations":{"0":"B###A","1":"A###D###F","2":"B###F###E","3":"B###C","4":"B###D","5":"D###E###C","6":"C###F"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[{"substemid":"2","questionrelies":"1","pictures":[],"appliedproblems":{}}]}

NLP: Know:QuadrilateralRelation{quadrilateral=ABCD},MultiEqualityRelation [multiExpressCompare=∠BAD=∠ABC=(1/2*Pi), originExpressRelationList=[], keyWord=null, result=null],EqualityRelation{AD=1},EqualityRelation{BC=3},MiddlePointOfSegmentRelation{middlePoint=E,segment=CD},LineCrossRelation [crossPoint=Optional.of(F), iLine1=BE, iLine2=AD],SegmentRelation:CF,Know:QuadrilateralRelation{quadrilateral=BCFD},EqualityRelation{S_BCFD=v_0},EqualityRelation{BC=CD},Calculation:(ExpressRelation:[key:]v_0),ProveConclusionRelation:[Proof: ParallelogramRelation{parallelogram=Parallelogram:BCFD}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]S_BCFD)}

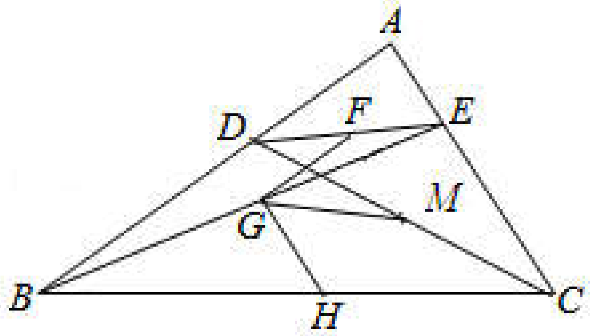
20, topic: as shown, is \$ PA \$ \$ \ odot O \$ tangent, tangent point A is a straight line cross \$ PO \$ \$ \ odot O \$ and points E, F through the point A perpendicular line for \$ \$ \$ PO AB \$ pedal is D, deposit \$ \ odot O \$ and point B, the extended BO \$ \$ and \$ \ odot O \$ deposit and points C, connected \$ AC \$, \$ BF \$ (1) Prove:. \$ PB \$ and \$ \ odot O \$ tangent; relationship between the number #% # (2) to explore the test line \$ EF \$, \$ OD \$, \$ OP \$, and proved; #% # (3) if \$ AC =12 \$, \$ \ tan \ angle F =\ frac {1} {2} \$, seeking \$ \ COS \ value of the angle ACB \$.



graph:
{"stem":{"pictures":[{"picturename":"1000010427_Q_1.jpg","coordinates":{"A":"12.10,-1.80","B":"12.10,-13.5","C":"4.50,-1.80","D":"12.1,-7.60","O":"8.30,-7.60","E":"15.20,-7.60","F":"1.30,-7.60","P":"2.06,-7.60"},"collineations":{"0":"B###D###F","1":"D###O###F###E###P","2":"C###O###B","3":"A###C","4":"B###F","5":"P###A","6":"P###B"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: LinePerpRelation{line1=PO, line2=AB, crossPoint=},PointOnLineRelation{point=A, line=AB, isConstant=false, extension=false},LineContactCircleRelation{line=PA, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, contactPoint=Optional.of(A), outpoint=Optional.of(P)},LineCrossCircleRelation{line=PO, circle=⊙O, crossPoints=[E], crossPointNum=1},LineCrossCircleRelation{line=AB, circle=⊙O, crossPoints=[B], crossPointNum=1},LineCrossCircleRelation{line=BO, circle=⊙O, crossPoints=[C], crossPointNum=1},SegmentRelation:AC,SegmentRelation:BF,Calculation:(ExpressRelation:[key:](EF/DO)),Calculation:(ExpressRelation:[key:](DO/OP)),EqualityRelation{AC=12},EqualityRelation{tan(∠F)=(1/2)},Calculation:(ExpressRelation:[key:]cos(∠ACO)),ProveConclusionRelation:[Proof: LineContactCircleRelation{line=PB, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, contactPoint=Optional.absent(), outpoint=Optional.absent()}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:](EF/DO))},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:](DO/OP))},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]cos(∠ACO))}

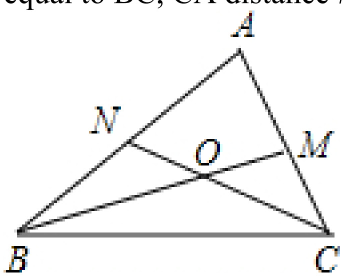
21, topic: FIG, points D, E Rt △ABC are two right-angle side AB, the point on the AC, connected BE, known points F, G, H are DE, BE, BC midpoint of #%. # (1) the required degree ∠FGH;% # # (2) connected to the CD, to take the midpoint M CD connected GM, if BD =8, CE =6, GM seeking long #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000031946_Q_1.jpg","coordinates":{"A":"-11.00,5.00","B":"-13.25,2.01","C":"-7.00,2.00","D":"-12.07,3.57","E":"-9.65,3.98","F":"-10.86,3.78","G":"-11.45,2.99","H":"-10.12,2.00"},"collineations":{"0":"A###D###B","1":"B###H###C","2":"A###E###C","3":"D###F###E","4":"B###G###E","5":"G###F","6":"G###H","7":"C###D"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[{"substemid":"1","questionrelies":"","pictures":[{"picturename":"1000031946_Q_1.jpg","coordinates":{"M":"-9.53,2.79"},"collineations":{"0":"G###M"},"variable-equals":{},"circles":[]}],"appliedproblems":{}}]}

NLP: PointOnLineRelation{point=D, line=AB, isConstant=false, extension=false},PointOnLineRelation{point=E, line=AC, isConstant=false, extension=false},RightTriangleRelation:RightTriangle:△ABC[Optional.of(A)],LineRoleRelation{Segment=AB, roleType=RIGHTLEG},LineRoleRelation{Segment=AC, roleType=RIGHTLEG},SegmentRelation:BE,MiddlePointOfSegmentRelation{middlePoint=F,segment=DE},MiddlePointOfSegmentRelation{middlePoint=G,segment=BE},MiddlePointOfSegmentRelation{middlePoint=H,segment=BC},Calculation:AngleRelation{angle=∠FGH},MiddlePointOfSegmentRelation{middlePoint=M,segment=CD},EqualityRelation{GM=v_0},SegmentRelation:CD,PointRelation:M,SegmentRelation:GM,EqualityRelation{BD=8},EqualityRelation{CE=6},Calculation:(ExpressRelation:[key:]v_0),SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]∠FGH)},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]GM)}

22, topic: FIG, △ABC angle bisector BM, CN intersect at O. Proof: point O to the three sides AB, equal to BC, CA distance #% # <img>.

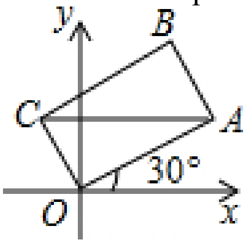


graph:
{"stem":{"pictures":[{"picturename":"1000035764_Q_1.jpg","coordinates":{"A":"2.17,2.28","B":"0.00,0.00","C":"3.41,0.00","M":"2.77,1.18","N":"1.23,1.29","O":"1.98,0.85"},"collineations":{"0":"A###N###B","1":"B###C","2":"C###M###A","3":"B###O###M","4":"C###O###N"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleRelation:△ABC,LineCrossRelation [crossPoint=Optional.of(O), iLine1=BM, iLine2=CN],PointToLineDistanceRelation{point=O, line=AB, distance=Express:[d_1]},PointToLineDistanceRelation{point=O, line=BC, distance=Express:[d_2]},PointToLineDistanceRelation{point=O, line=CA, distance=Express:[d_3]},AngleBisectorRelation{line=BM,angle=∠CBN, angle1=∠MBN, angle2=∠

CBM},AngleBisectorRelation{line=CN,angle=∠BCM, angle1=∠BCN, angle2=∠MCN},ProveConclusionRelation:[Proof: MultiEqualityRelation [multiExpressCompare=d_1=d_2=d_3, originExpressRelationList=[], keyWord=null, result=null]]

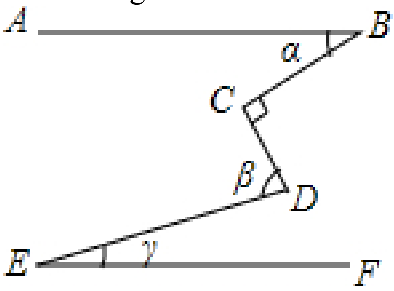
23, topic: As shown in the plane rectangular coordinate system, the rectangular OABC AC diagonal parallel to the x-axis, the positive side of the x-axis OA and the axle angle of 30 °, OC =2, are the coordinates of point B . #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000061900_Q_1.jpg","coordinates":{"A":"10.01,6.73","B":"9.01,8.47","C":"6.00,6.73","O":"7.00,5.00","E":"9.01,5.00"},"collineations":{"0":"A###B","1":"B###C","2":"C###O","3":"O###A","4":"A###C","5":"B###O","6":"B###E","7":"E###O"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: RectangleRelation{rectangle=Rectangle:OABC},LineParallelRelation [iLine1=AC, iLine2=StraightLine[X] analytic :y=0 slope:0 b:0 isLinearFunction:false],LinesAngleRelation [line1=StraightLine[AO] analytic :y=k_AO*x+b_AO slope:null b:null isLinearFunction:false, line2=StraightLine[X] analytic :y=0[x>0] slope:0 b:0 isLinearFunction:false, angle=(1/6*Pi)(普通角)],EqualityRelation{CO=2},Coordinate:PointRelation:B,SolutionConclusionRelation{relation=Coordinate:PointRelation:B}

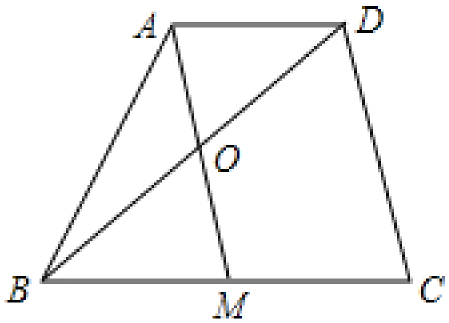
24, topic: FIG known AB // EF, ∠BCD =90 °, the relationship between the probe request FIG α, β, γ #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000082663_Q_1.jpg","coordinates":{"A":"2.00,8.00","B":"10.00,8.00","C":"6.00,6.00","D":"6.89,4.21","E":"2.00,2.00","F":"10.00,2.00"},"collineations":{"0":"B###C","1":"A###B","2":"E###D","3":"D###C","4":"E###F"},"variable-equals":{"0":"∠α=∠ABC","1":"∠β=∠CDE","2":"∠γ=∠DEF"},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: LineParallelRelation [iLine1 =AB, iLine2 =EF], EqualityRelation {∠BCD =(1/2 * Pi)}, (ExpressRelation: [key:] β), evaluation (size) :(ExpressRelation: [key:] α), SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] α)}

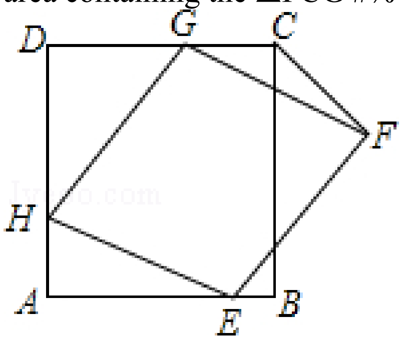
25, topic: As shown in the quadrilateral ABCD is known M is the midpoint of BC, AM, BD bisect each other and intersect at point O, Proof: AMCD quadrilateral is a parallelogram #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000037168_Q_1.jpg","coordinates":{"A":"2.00,4.00","B":"0.00,0.00","C":"6.00,0.00","D":"5.00,4.00","M":"3.00,0.00","O":"2.50,2.00"},"collineations":{"0":"B###A","1":"B###O###D","2":"B###M###C","3":"A###O###M","4":"D###A","5":"D###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: Know:QuadrilateralRelation{quadrilateral=ABCD},MiddlePointOfSegmentRelation{middlePoint=M,segment=BC},LineDecileSegmentRelation [iLine1=AM, iLine2=BD, crossPoint=Optional.of(O)],LineDecileSegmentRelation [iLine1=BD, iLine2=AM, crossPoint=Optional.of(O)],ProveConclusionRelation:[Proof: ParallelogramRelation{parallelogram=Parallelogram:ADCM}]

26, topic:. As shown, the side length of the square ABCD E 6. three vertices EFGH of diamond, G, H, respectively, on the sides of the square ABCD of AB, CD, DA, and AH =2, is connected CF #% # (1) when DG =2, proving: diamond square EFGH;% # # (2) provided DG =x, x trial algebraic representation of the area containing the △FCG #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000040726_Q_1.jpg","coordinates":{"A":"0.00,0.00","B":"3.00,0.00","C":"3.00,3.00","D":"0.00,3.00","E":"2.00,0.00","F":"4.00,2.00","G":"2.00,3.00","H":"0.00,1.00"},"collineations":{"0":"A###E###B","1":"B###C","2":"C###G###D","3":"D###H###A","4":"E###F","5":"F###G","6":"G###H","7":"E###H","8":"C###F"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

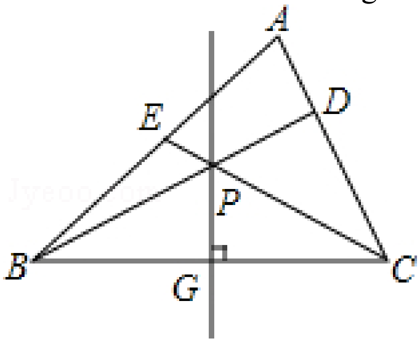
NLP: SquareRelation {square =Square: ABCD, length =6}, SegmentRelation: CD, SegmentRelation: DA, EqualityRelation {AH =2}, SegmentRelation: CF, EqualityRelation {DG =2}, EqualityRelation {S_△CFG =v_0}, EqualityRelation {DG =x}, the relationship between the expression: DualExpressRelation {expresses =[Express: [v_0], Express: [x]]}, ProveConclusionRelation: [Proof: SquareRelation {square =Square: EFGH}], SolutionConclusionRelation { relationship between the expression of relation =: DualExpressRelation {expresses =[Express: [v_0], Express: [x]]}}

27, topic: FIG point M, N two trisection points on the line segment AB, point A, B on the $ ⊙O $, Proof: $ ∠OMN =∠ONM $

graph:
{"stem":{"pictures":[{"picturename":"1000024869_Q_1.jpg","coordinates":{"A":"-14.00,4.00","B":"-8.00,4.00","M":"-12.00,4.00","N":"-10.00,4.00","O":"-11.00,8.00"},"collineations":{"0":"M###O","1":"O###N","2":"A###M###N###B"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"A###B"}]}],"appliedproblems":{}},"substems":[]}

NLP: SegmentAliquotsPointRelation{aliquotsNum='3', points=[M, N], segment=AB},PointOnCircleRelation{circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, points=[A, B]},ProveConclusionRelation:[Proof: EqualityRelation{∠NMO=∠MNO}]

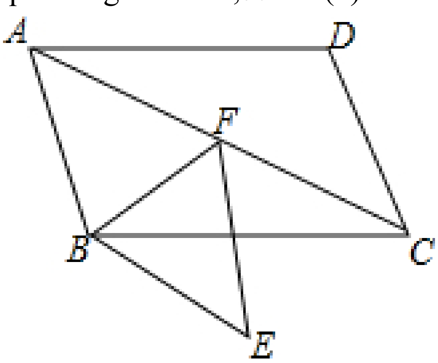
28, topic: As shown in the △ABC, PG is the perpendicular bisector of the side BC, and ∠ $ PBC ={\frac {1} {2}} $ ∠A, BP AC extension lines cross at points D, AB CP extension lines cross at point E, Proof: BE =CD #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000027221_Q_1.jpg","coordinates":{"A":"6.58,7.65","B":"1.00,1.00","C":"9.00,1.00","D":"7.61,4.82","E":"3.61,4.11","P":"5.00,3.31","G":"5.00,1.00"},"collineations":{"0":"P###G","1":"A###E###B","2":"A###D###C","3":"B###G###C","4":"B###P###D","5":"C###P###E"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleRelation:△ABC,MiddlePerpendicularRelation [iLine1=PG, iLine2=BC, crossPoint=Optional.of(G)],EqualityRelation{∠GBP=(1/2)*∠DAE},LineCrossRelation [crossPoint=Optional.of(D), iLine1=BP, iLine2=AC],LineCrossRelation [crossPoint=Optional.of(E), iLine1=CP, iLine2=AB],ProveConclusionRelation:[Proof: EqualityRelation{BE=CD}]

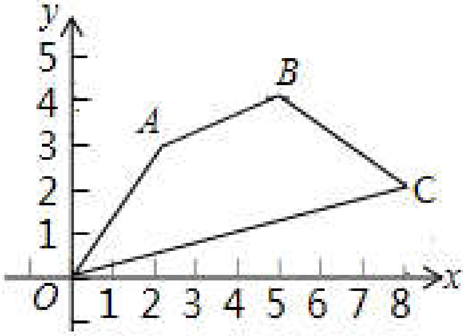
29, topic: FIG point F on the diagonal AC parallelogram ABCD, over points F, B respectively as AB, AC parallel lines at point E, is connected BF, ∠ABF =∠FCB + ∠FBC #. % # (1) Proof: a diamond quadrangle ABEF;% # # (2) when AF =5, BC =8, ∠CBE =30 °, long seeking AC #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000080090_Q_1.jpg","coordinates":{"A":"1.32,1.90","B":"2.09,0.00","C":"5.19,0.00","D":"4.42,1.90","E":"3.68,-0.98","F":"3.41,0.87"},"collineations":{"0":"A###F###C","1":"A###B","2":"A###D","3":"B###C","4":"B###E","5":"B###F","6":"C###D","7":"E###F"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: ParallelogramRelation{parallelogram=Parallelogram:ABCD},PointOnLineRelation{point=F, line=AC, isConstant=false, extension=false},LineParallelRelation [iLine1=FE, iLine2=AB],LineParallelRelation [iLine1=BE, iLine2=AC],SegmentRelation:BF,EqualityRelation{∠ABF=∠BCF+∠CBF},EqualityRelation{AC=v_0},EqualityRelation{AF=5},EqualityRelation{BC=8},EqualityRelation{∠CBE=(1/6*Pi)},Calculation:(ExpressRelation:[key:]v_0),ProveConclusionRelation:[Proof: RhombusRelation{rhombus=Rhombus:ABEF}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]AC)}

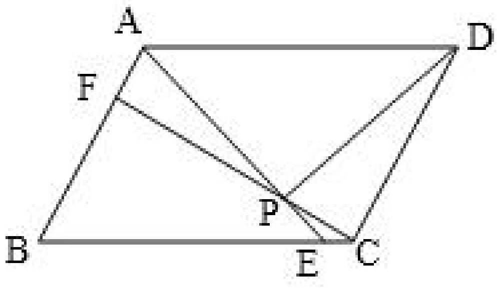
30, topic: as shown, in Cartesian coordinates, the coordinates of each vertex of the quadrilateral OABC are O (0,0), A (2,3), B (5,4), C (8,2) , determine the area of the quadrilateral. #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000070674_Q_1.jpg","coordinates":{"A":"2.00,3.00","B":"5.00,4.00","C":"8.00,2.00","O":"0.00,0.00"},"collineations":{"0":"A###B","1":"B###C","2":"A###O","3":"C###O"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: CoorSysTypeRelation [name =xOy, types =Cartesian coordinate system], known conditions QuadrilateralRelation {quadrilateral =ABCO}, PointRelation: O (0,0), PointRelation: A (2,3), PointRelation: B (5,4), PointRelation: C (8,2)

31, topic: parallelogram ABCD $ $, the set E, F are the BC, little, AE AB and CF intersect at the P, and $ AE =CF $ Proof: $ ∠DPA =∠DPC $.

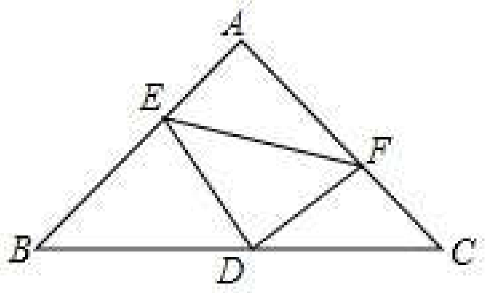


graph:
{"stem":{"pictures":[{"picturename":"1000011151_Q_1.jpg","coordinates":{"A":"3.00,6.00","B":"0.00,0.00

","C":"12.00,6.00","D":"9.00,0.00","E":"7.00,0.00","F":"2.11,4.21","P":"5.63,2.06"},"collineations":{"0":"D###C","1":"E###B###D","2":"A###F###B","3":"C###A","4":"A###E###P","5":"C###P","6":"D###F###P","7":"A###P###E"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: ParallelogramRelation{parallelogram=Parallelogram:ABCD},PointOnLineRelation{point=E, line=BC, isConstant=false, extension=false},PointOnLineRelation{point=F, line=AB, isConstant=false, extension=false},LineCrossRelation [crossPoint=Optional.of(P), iLine1=AE, iLine2=CF],EqualityRelation{AE=CF},ProveConclusionRelation:[Proof: EqualityRelation{∠APD=∠CPD}]

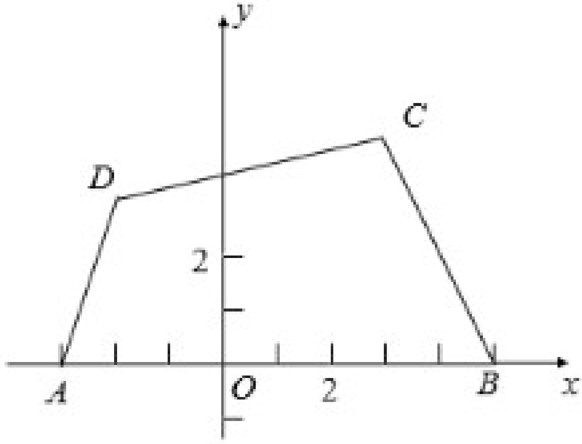
32, topic: FIG, $ \triangle ABC $ isosceles right triangle, $ AB =AC $, point D is the midpoint of the hypotenuse BC, E, F are AB, AC edge point, and $ DE\perp DF $, if $ BE =12 $, $ CF =5 $, $ \triangle DEF $ seeking area.



graph:
{"stem":{"pictures":[{"picturename":"1000007044_Q_1.jpg","coordinates":{"A":"12.02,12.02","B":"0.00,0.00","C":"24.04,0.00","D":"12.02,0.00","E":"8.48,8.48","F":"20.50,3.54"},"collineations":{"0":"A###F###C","1":"D###C###B","2":"E###F","3":"A###B###E","4":"D###E","5":"D###F"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP:
EqualityRelation{S_△DEF=v_0},IsoscelesRightTriangleRelation:IsoscelesRightTriangle:IsoscelesTriangle:△ABC[Optional.of(A)][Optional.of(A)],EqualityRelation{AB=AC},MiddlePointOfSegmentRelation{middlePoint=D,segment=BC},PointOnLineRelation{point=E, line=AB, isConstant=false, extension=false},PointOnLineRelation{point=F, line=AC, isConstant=false, extension=false},LinePerpRelation{line1=DE, line2=DF, crossPoint=D},EqualityRelation{BE=12},EqualityRelation{CF=5},Calculation:(ExpressRelation:[key:]v_0),SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]S_△DEF)}

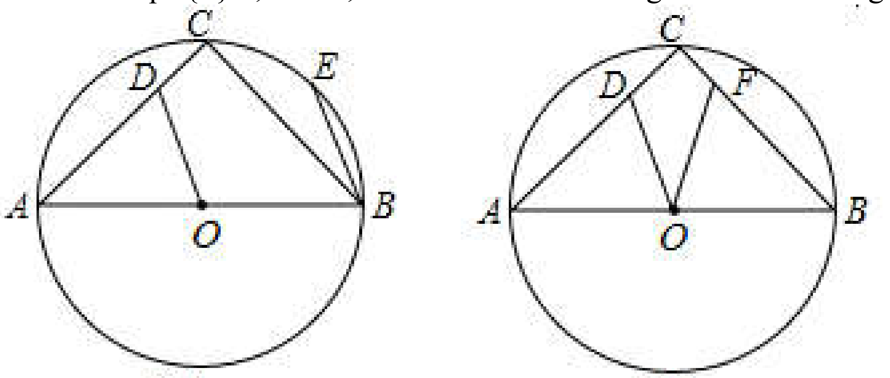
33, topic: As shown in the plane rectangular coordinate system, the point $ A (-3,0) $, $ B (5,0) $, $ C (3,4) $, $ D (-2,3) $, find the area of the quadrilateral ABCD.



graph:
{"stem":{"pictures":[{"picturename":"1000006945_Q_1.jpg","coordinates":{"A":"-3.00,0.00","B":"5.00,0.00","C":"3.00,4.00","D":"-2.00,3.00","O":"0.00,0.00"},"collineations":{"0":"A###B","1":"C###B","2":"C###D","3":"D###A"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: known conditions QuadrilateralRelation {quadrilateral =ABCD}, EqualityRelation {S_ABCD =v_0}, PointRelation: A (-3,0), PointRelation: B (5,0), PointRelation: C (3,4), PointRelation: D (2,3), the evaluator (size) :(ExpressRelation: [key:] v_0), SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] S_ABCD)}

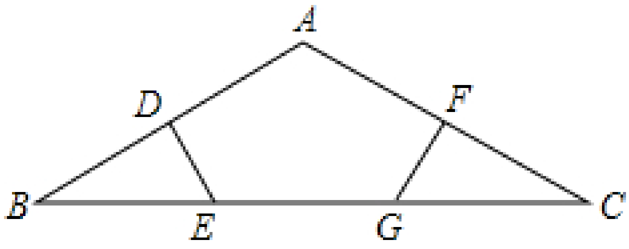
34, topic: FIG known: ⊙O Rt △ABC circumcircle is, point D on the side AC, AD =AO; #% # (1) in FIG. 1, if the string BE // OD, Proof: OD =BE;. #% # (2) in FIG. 2, point F on the side BC, BF =BO, if $ OD =2 \ sqrt {2} $, oF =3, the diameter of seeking ⊙O #% # < img>



graph:
{"stem":{"pictures":[],"appliedproblems":{}},"substems":[{"substemid":"1","questionrelies":"","pictures":[{"picturename":"1000052512_Q_1.jpg","coordinates":{"A":"-3.00,0.00","B":"3.00,0.00","C":"0.15,3.00","D":"-0.83,2.07","E":"2.17,2.07","O":"0.00,0.00"},"collineations":{"0":"B###O###A","1":"C###D###A","2":"C###B","3":"D###O","4":"B###E"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"A###C###E###B"}]}],"appliedproblems":{}},{"substemid":"2","questionrelies":"","pictures":[{"picturename":"1000052512_Q_2.jpg","coordinates":{"A":"-3.00,0.00","B":"3.00,0.00","C":"0.15,3.00","D":"-0.83,2.07","F":"0.93,2.17","O":"0.00,0.00"},"collineations":{"0":"B###O###A","1":"C###D###A","2":"C###F###B","3":"D###O","4":"F###O"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"A###B###C"}]}],"appliedproblems":{}}]}

NLP: InscribedShapeOfCircleRelation{closedShape=△ABC, circle=Circle[⊙O_0]{center=O_0, analytic=(x-x_O_0)^2+(y-y_O_0)^2=r_O_0^2}},PointOnLineRelation{point=D, line=AC, isConstant=false, extension=false},EqualityRelation{AD=AO},ChordOfCircleRelation{chord=BE, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, chordLength=null,straightLine=null},(ExpressRelation:[key:]1),LineParallelRelation [iLine1=BE, iLine2=OD],(ExpressRelation:[key:]2),PointOnLineRelation{point=F, line=BC, isConstant=false, extension=false},EqualityRelation{BF=BO},EqualityRelation{DO=2*(2^(1/2))},EqualityRelation{FO=3},圆的直径：CircleRelation{circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}},ProveConclusionRelation:[Proof: EqualityRelation{DO=BE}],SolutionConclusionRelation{relation=圆的直径：CircleRelation{circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}}}

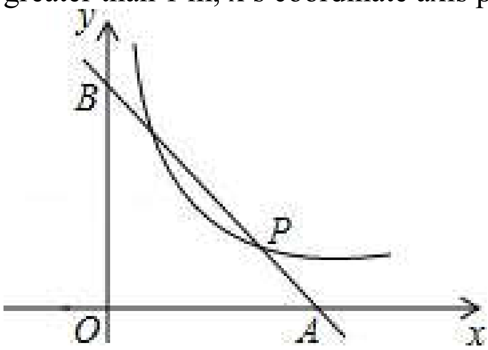
35, topic: As shown in the △ABC, AB =AC, ∠BAC =120 °, D, F are AB, AC the midpoint, DE⊥AB, GF⊥AC, point E, G are on BC , BC =15cm, EG seeking long. #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"483B98C9CC3649BFBC4D02A6EA451C0C.jpg","coordinates":{"A":"-7.50,7.33","B":"-15.00,3.00","C":"-0.00,3.00","D":"-11.25,5.17","E":"-10.00,3.00","F":"-3.75,5.17","G":"-5.00,3.00"},"collineations":{"0":"C###A###F","1":"A###B###D","2":"D###E","3":"C###B###E###G","4":"F###G"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP:
EqualityRelation{EG=v_0},TriangleRelation:△ABC,EqualityRelation{AB=AC},EqualityRelation{∠DAF=(2/3*Pi)},MiddlePointOfSegmentRelation{middlePoint=D,segment=AB},MiddlePointOfSegmentRelation{middlePoint=F,segment=AC},LinePerpRelation{line1=DE, line2=AB, crossPoint=D},LinePerpRelation{line1=GF, line2=AC, crossPoint=F},PointOnLineRelation{point=E, line=BC, isConstant=false, extension=false},PointOnLineRelation{point=G, line=BC, isConstant=false, extension=false},EqualityRelation{BC=15},Calculation:(ExpressRelation:[key:]v_0),SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]EG)}

36, topic: As shown, the straight line $ y =-x + 3 $ and x, y axes intersect at points A, B, inverse proportion to the image function at point $ P (2,1) $ #%.? # (1) find the relation of the inverse function of the;? #% # (2) provided $ PC \ bot y $ axis at points C, the point a on the y-axis symmetry point $ a '$;? #% # ① request $ \ vartriangle a 'BC $ perimeter and $ \ sin \ angle BA' value of C $;? #% # ② constant of greater than 1 m, x s coordinate axis point m, so that the $ \ SiN \ angle BMC =\ frac {1} {\ pi} $.

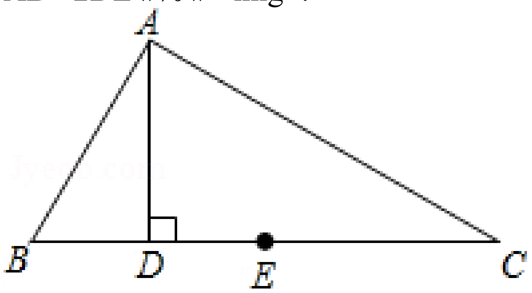


graph:
{"stem":{"pictures":[{"picturename":"1000010411_Q_1.jpg","coordinates":{"A":"3.00,0.00","B":"0.00,3.00","P":"2.00,1.00","O":"0.00,0.00"},"collineations":{"0":"B###A###P"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[{"substemid":"1","questionrelies":"","pictures":[],"appliedproblems":{}},{"substemid":"2","questionrelies":"1","pictures":[{"picturename":"45.jpg","coordinates":{"A'":"-3.00,0.00","C":"0.00,1.00"},"collineations":{"0":"B###A'","1":"C###A'","2":"B###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}}]}

NLP: LineCrossRelation [crossPoint=Optional.of(A), iLine1=StraightLine[n_0] analytic :y=-x+3 slope:-1 b:3 isLinearFunction:true, iLine2=StraightLine[X] analytic :y=0 slope:0 b:0 isLinearFunction:false],LineCrossRelation [crossPoint=Optional.of(B), iLine1=StraightLine[n_0] analytic :y=-x+3 slope:-1 b:3 isLinearFunction:true, iLine2=StraightLine[Y] analytic :x=0 slope: b: isLinearFunction:false],FunctionCrossRelation:{function1=INVERSEPROPORTION,InverseProportion[]:y=-x+3 , function2=CommonFunction[]:y=k_1/x,Domain:null Conditions:[[]],

crossPoints=[point1:[P(2,1)]] ,crossPointNum=[1]},Analytic expression,Equation:InverseProportionFunctionRelation{inverseProportion=INVERSEPROPORTION,InverseProportion[]:y=k_1/x},LinePerpRelation{line1=PC, line2=StraightLine[Y] analytic :x=0 slope: b: isLinearFunction:false, crossPoint=C},SymmetricRelation{preData=A,afterData=A',symmetric=StraightLine[Y] analytic :x=0 slope: b: isLinearFunction:false, pivot=},EqualityRelation{C_△A'BC=v_2},Calculation:(ExpressRelation:[key:]v_2),Calculation:(ExpressRelation:[key:]sin(BA'*∠C)),ConstantValueRelation [constantObject=Express:[m]],InequalityRelation{m>1},EqualityRelation{sin(∠BMC)=(1/(Pi))},Coordinate:PointRelation:M,PointOnLineRelation{point=M, line=StraightLine[X] analytic :y=0 slope:0 b:0 isLinearFunction:false, isConstant=false, extension=false},SolutionConclusionRelation{relation=Analytic expression,Equation:InverseProportionFunctionRelation{inverseProportion=INVERSEPROPORTION,InverseProportion[]:y=k_1/x}},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]C_△A'BC)},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]sin(BA'*∠C))},SolutionConclusionRelation{relation=Coordinate:PointRelation:M}

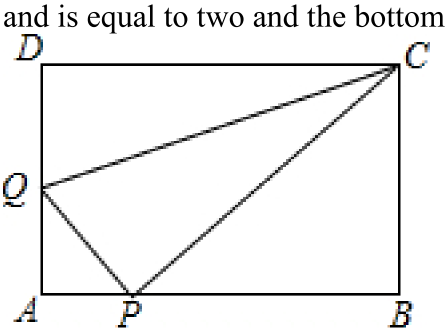
37, topic: As shown in △ABC, if ∠B =2∠C, AD⊥BC, E is the midpoint of the side BC, confirmation: AB =2DE #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000031911_Q_1.jpg","coordinates":{"A":"-6.49,5.78","B":"-8.26,2.75","C":"-1.24,2.73","D":"-6.50,2.75","E":"-4.75,2.74"},"collineations":{"0":"B###A","1":"A###C","2":"A###D","3":"B###D###E###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleRelation:△ABC,EqualityRelation{∠ABD=2*∠ACE},LinePerpRelation{line1=AD, line2=BC, crossPoint=D},MiddlePointOfSegmentRelation{middlePoint=E,segment=BC},ProveConclusionRelation:[Proof: EqualityRelation{AB=2*DE}]

38, topic: As shown in the rectangle ABCD, AB =5, AD =3, point P is a point on the edge AB (not with A, B overlap), the CP is connected, through the point P to the side AD as the cross PQ⊥CP point Q, is connected CQ #% # (1) when △CDQ≌ △CPQ, the rectification of AQ; midpoint M #% # (2) take CQ connected MD, MP, if MD⊥MP, seeking AQ long. (Note: bit line trapezoid is parallel to the two substrates, and is equal to two and the bottom half) #% # <img>



graph:
{"stem":{"pictures":[],"appliedproblems":{}},"substems":[{"substemid":"1","questionrelies":"","pictures":[{"picturename":"1000061895_Q_1.jpg","coordinates":{"A":"4.00,3.00","B":"9.00,3.00","C":"9.00,6.00","D":"4.00,6.00","P":"5.00,3.00","Q":"4.00,4.33"},"collineations":{"0":"A###P###B","1":"B###C","2":"C###D","3":"D###Q###A","4":"C###Q","5":"C###P","6":"Q###P"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},{"substemid":"2","questionrelies":"","pictures":[{"picturename":"1000061895_Q_1.jpg","coordinates":{"A":"12.00,3.00","B":"17.00,3.00","C":"17.00,6.00","D":"12.00,6.00","M":"14.50,5.50","P":"14.00,3.00","Q":"12.00,5.00"},"collineations":{"0":"A###P###B","1":"B###C","2":"C###D","3":"D###Q###A","4":"C###M###Q","5":"C###P","6":"D###M","7":"Q###P","8":"P###M"},"variable-equals":{},"circles":[]}],"appliedproblems":{}}]}

NLP:
PointRelation:A,PointRelation:B,RectangleRelation{rectangle=Rectangle:ABCD},EqualityRelation{AB=5},EqualityRelation{AD=3},PointOnLineRelation{point=P, line=AB, isConstant=false, extension=false},SegmentRelation:CP,LineCrossRelation [crossPoint=Optional.of(Q), iLine1=PQ, iLine2=AD],LinePerpRelation{line1=PQ, line2=CP, crossPoint=P},SegmentRelation:CQ,EqualityRelation{AQ=v_0},TriangleCongRelation{triangleA=△CDQ, triangleB=△CPQ},Calculation:(ExpressRelation:[key:]v_0),MiddlePointOfSegmentRelation{middlePoint=M,segment=CQ},EqualityRelation{AQ=v_1},PointRelation:M,SegmentRelation:MD,SegmentRelation:MP,LinePerpRelation{line1=MD, line2=MP, crossPoint=M},Calculation:(ExpressRelation:[key:]v_1),SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]AQ)},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]AQ)}
}

39, topic: respectively sides AC △ABC is, BC is the edge for a square ACDE and square BCFG outward triangular, denoted △ABC, △DCF area are $ {{S} _ {1}} $ and $ {{ S} _ {2}} $ #% # <img>#% # (1) in FIG. 1, when ∠ACB =90 °, Proof: . $ {{S} _ {1}} ={{S} {2}} _ $ #% # (2) in FIG. 2, when ∠ACB ≠ 90 °, $ {{S} _ {1}} $ {$ {S} and {2}} $ _ is still equal? Please explain the reasons.

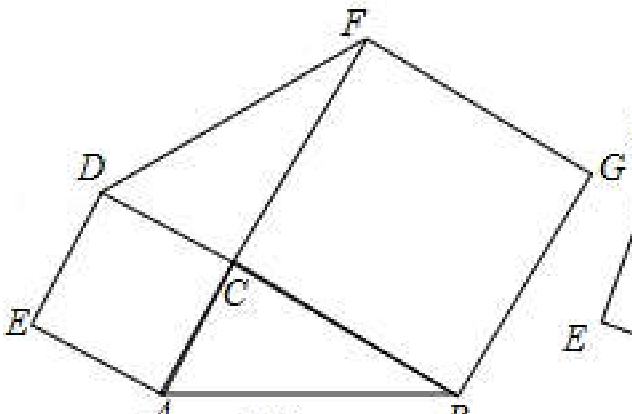


图1

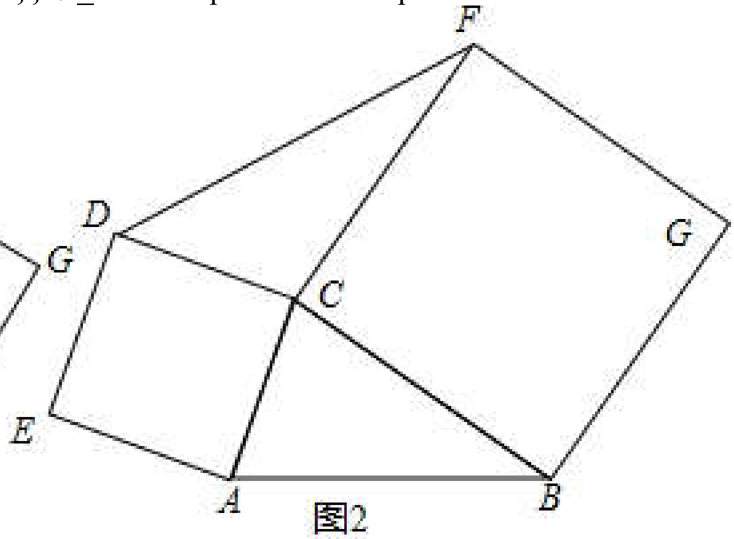


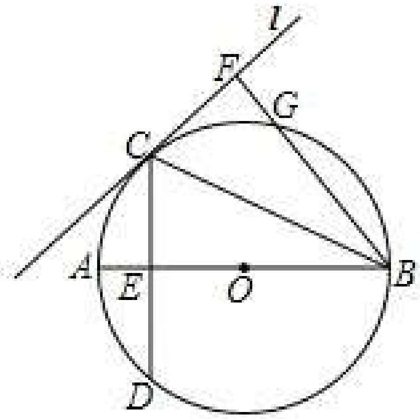
图2

graph:
{"stem":{"pictures":[],"appliedproblems":{}},"substems":[{"substemid":"1","questionrelies":"","pictures":[{"picturename":"1000030868_Q_1.jpg","coordinates":{"A":"-5.80,0.00","B":"0.00,0.00","C":"-5.00,2.00","D":"-7.00,2.80","E":"-7.80,0.80","F":"-3.00,7.00","G":"2.00,5.00"},"collineations":{"0":"A###B","1":"B###C","2":"A###C","3":"A###E","4":"E###D","5":"D###C","6":"D###F","7":"C###F","8":"G###F","9":"G###B"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},{"substemid":"2","questionrelies":"","pictures":[{"picturename":"1000030868_Q_2.jpg","coordinates":{"A":"-4.00,0.00","B":"0.00,0.00","C":"-3.00,2.00","D":"-5.00,3.00","E":"-6.00,1.00","F":"-1.00,5.00","G":"2.00,3.00"},"collineations":{"0":"A###B","1":

"B###C","2":"A###C","3":"A###E","4":"E###D","5":"D###C","6":"D###F","7":"C###F","8":"G###F","9":"G###B"},"variable-equals":{},"circles":[]}],"appliedproblems":{}}]}

NLP:
SquareRelation{square=Square:ACDE},SquareRelation{square=Square:BCFG},TriangleRelation:△ABC,EqualityRelation{S_△ABC=S_1},EqualityRelation{S_△CDF=S_2},(ExpressRelation:[key:]1),EqualityRelation{∠ACB=(1/2*Pi)},(ExpressRelation:[key:]2),ProveConclusionRelation:[Proof: EqualityRelation{S_1=S_2}],ProveConclusionRelation:[Proof: EqualityRelation{S_1=S_2}]

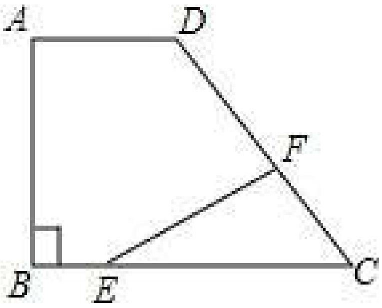
40, topic: FIG known $ ⊙O $ AB is the diameter of the straight line L $ $ $ ⊙O $ tangent to the points C, and arc arc AC =the AD, CD cross chord AB at E, $ BF⊥ l $, pedal is F, BF to pay $ ⊙O $ G.?#%#(1) Proof: $ {{CE} ^ {2}} =FG \ cdot FB $; #% # (2)? If $ {\ tan} \ angle {CBF} =\ frac {1} {2} $, $ AE =3 $, $ ⊙O $ required diameter. <img>



graph:
{"stem":{"pictures":[{"picturename":"1000008295_Q_1.jpg","coordinates":{"A":"-7.50,0.00","B":"7.50,0.00","C":"-4.50,6.00","D":"-4.50,-6.00","E":"-4.50,0.00","F":"0.30,9.60","G":"2.10,7.20","O":"0.00,0.00"},"collineations":{"0":"F###G###B","1":"F###C","2":"B###C","3":"D###C###E","4":"A###E###O###B"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"A###B###C###D###G"}]}],"appliedproblems":{}},"substems":[]}

NLP: ChordOfCircleRelation{chord=CD, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, chordLength=null,straightLine=null},DiameterRelation{diameter=AB, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, length=null},LineContactCircleRelation{line=CF, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, contactPoint=Optional.of(C), outpoint=Optional.of(F)},LineCrossRelation [crossPoint=Optional.of(E), iLine1=CD, iLine2=AB],LinePerpRelation{line1=CF, line2=BF, crossPoint=F},LineCrossCircleRelation{line=BF, circle=⊙O, crossPoints=[G], crossPointNum=1},EqualityRelation{tan∠(CBF)=(1/2)},EqualityRelation{AE=3},圆的直径：CircleRelation{circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}},ProveConclusionRelation:[Proof: EqualityRelation{((CE)^2)=FG*BF}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]AB)}

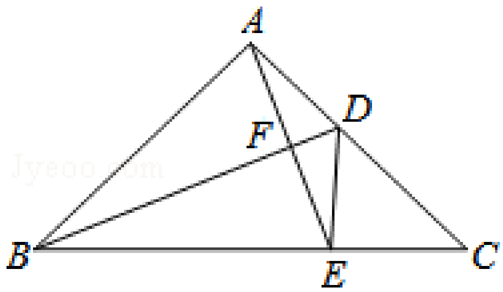
41, topic: Given: As shown in the right trapezoid ABCD $ $ in, $ AD∥BC $, $ ∠A =90 ° $, $ BC =CD =10 $, $ \ sin C =\ frac {4} .?? 5} {% $ # # (1) find the right trapezoid ABCD $ $ area;% # # (2) point E a point on BC, through the point E to a point as $ EF⊥DC $ F. confirmation: $ AB \ cdot CE =EF \ cdot CD $.



graph:
{"stem":{"pictures":[{"picturename":"1000007566_Q_1.jpg","coordinates":{"A":"0.00,8.00","B":"0.00,0.00","C":"10.00,0.00","D":"4.00,8.00","E":"2.00,0.00","F":"7.12,3.84"},"collineations":{"0":"D###A","1":"F###C###D","2":"F###E","3":"A###B","4":"B###E###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: RightTrapezoidRelation{rightTrapezoid=RightTrapezoid:ABCD randomOrder:true},LineParallelRelation [iLine1=AD, iLine2=BC],EqualityRelation{∠BAD=(1/2*Pi)},MultiEqualityRelation [multiExpressCompare=BC=CD=10, originExpressRelationList=[], keyWord=null, result=null],EqualityRelation{sin(∠ECF)=(4/5)},TrapezoidRelation{trapezoid=Trapezoid:ABCD, isRandomOrder:true},EqualityRelation{S_ABCD=v_0},PointOnLineRelation{point=E, line=BC, isConstant=false, extension=false},LinePerpRelation{line1=EF, line2=DC, crossPoint=F},ProveConclusionRelation:[Proof: EqualityRelation{AB*CE=EF*CD}]

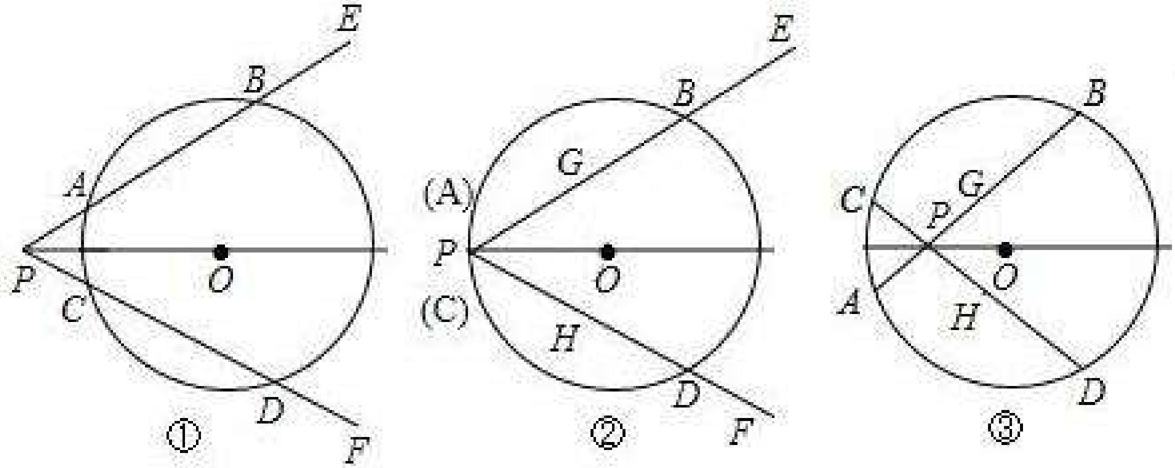
42, topic: FIG, △ABC medium, AB =AC =5, BC =8, point D on the AC, the point E on BC, and BD exactly perpendicular bisector AE to point F, the △AEC find the △BEF area ratio. #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000030974_Q_1.jpg","coordinates":{"A":"-10.00,9.00","B":"-14.00,6.00","C":"-6.00,6.00","F":"-9.18,7.5","E":"-8.63,6.00","D":"-9.56,8.04"},"collineations":{"0":"A###D###C","1":"D###F###B","2":"A###F###E","3":"B###E###C","4":"A###B","5":"D###E"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: EqualityRelation{S_△BEF=v_0},EqualityRelation{S_△ACE=v_1},EqualityRelation{v_0/(v_1)=v_2},TriangleRelation:△ABC,MultiEqualityRelation [multiExpressCompare=AB=AC=5, originExpressRelationList=[], keyWord=null, result=null],EqualityRelation{BC=8},PointOnLineRelation{point=D, line=AC, isConstant=false, extension=false},PointOnLineRelation{point=E, line=BC, isConstant=false, extension=false},MiddlePerpendicularRelation [iLine1=BD, iLine2=AE, crossPoint=Optional.of(F)],Calculation:(ExpressRelation:[key:]v_2),SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]v_2)}

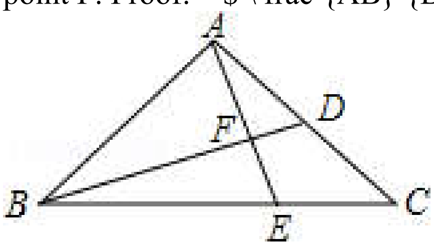
43, topic: shown in FIG ① , known point O is a point $ \angle EPF $ bisector to the center point O of the two sides are round the corner at point A, B and C, D #. % # (1) Proof: $ AB =CD $ #% # (2) on a circle, as shown when the apex angle P ② , the above conclusion holds it please indicate; #% # (3) if.? P apex angle in the circle, as shown in ③ above conclusion holds it? Please be described. #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000008153_Q_1.jpg","coordinates":{"A":"0.06,0.53","B":"3.54,2.27","C":"0.06,-0.53","D":"3.54,-2.27","E":"5.00,3.00","F":"5.00,-3.00","O":"2.50,0.00","P":"-1.00,0.00"},"collineations":{"0":"B###A###P###E","1":"C###D###F###P"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"C###D###A###B"}]}],"appliedproblems":{}},"substems":[{"substemid":"1","questionrelies":"","pictures":[{"picturename":"1000008153_Q_2.jpg","coordinates":{"A":"0.00,0.00","B":"3.68,2.21","C":"0.00,0.00","D":"3.68,-2.21","E":"5.00,3.00","F":"5.00,-3.00","O":"2.50,0.00","P":"0.00,0.00"},"collineations":{"0":"B###P###E","1":"D###F###P"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},{"substemid":"2","questionrelies":"","pictures":[{"picturename":"1000008153_Q_3.jpg","coordinates":{"A":"0.11,-0.73","B":"3.68,2.21","C":"0.11,0.73","D":"3.68,-2.21","O":"2.50,0.00","P":"1.00,0.00"},"collineations":{"0":"B###P###A","1":"D###C###P"},"variable-equals":{},"circles":[]}],"appliedproblems":{}}]}

NLP: AngleBisectorRelation{line=M_0N_0,angle=∠APC, angle1=∠APM_0, angle2=∠CPM_0},CircleCenterRelation{point=O, conic=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}},PointRelation:B,PointRelation:C,PointRelation:D,ProveConclusionRelation:[Proof: EqualityRelation{AB=CD}]

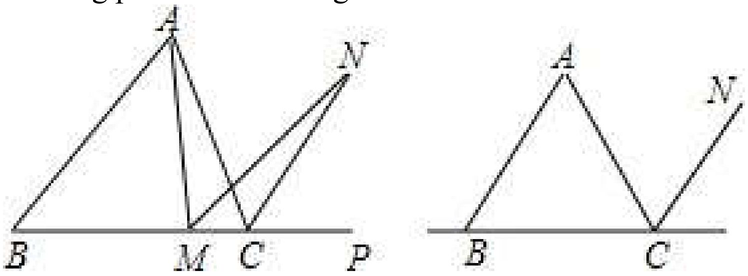
44, topic: As shown in the △ABC, AC line to the edge of the BD, BE =AB, AE and BD intersect at the point F. Proof: $ \frac {AB} {BC} =\frac {EF} {AF} $. #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000041517_Q_1.jpg","coordinates":{"A":"1.79,1.95","B":"0.00,0.00","C":"4.29,0.00","D":"3.04,0.97","E":"2.65,0.00","F":"2.32,0.74"},"collineations":{"0":"A###B","1":"B###E###C","2":"C###D###A","3":"A###F###E","4":"B###F###D"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleRelation:△ABC,LineDecileSegmentRelation [iLine1=BD, iLine2=AC, crossPoint=Optional.of(D)],EqualityRelation{BE=AB},LineCrossRelation [crossPoint=Optional.of(F), iLine1=AE, iLine2=BD],ProveConclusionRelation:[Proof: EqualityRelation{((AB)/(BC))=((EF)/(AF))}]

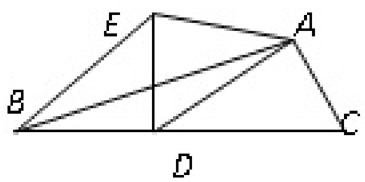
45, topic: FIG, equilateral triangle ABC, M is a side BC (excluding endpoint B, C) of any point, P is a point on an extension line BC, N being ∠ACP bisector point. Known ∠AMN =60 ° #% # (1) Prove:. AM =MN; #% # (2) when M is moving in a straight line BC, the above conclusion holds? If established, please drawing prove. #% # <Img>



graph:
{"stem":{"pictures":[{"picturename":"1000040801_Q_1.jpg","coordinates":{"A":"-1.92,1.08","B":"-4.42,-3.25","C":"0.58,-3.25","P":"3.12,-3.25","M":"-1.14,-3.25","N":"2.21,-0.43"},"collineations":{"0":"A###B","1":"A###M","2":"C###A","3":"M###N","4":"B###M###C###P","5":"C###N"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: AngleBisectorRelation{line=CN,angle=∠ACP, angle1=∠ACN, angle2=∠NCP},PointRelation:C,RegularTriangleRelation:RegularTriangle:△ABC,PointOnLineRelation{point=M, line=BC, isConstant=false, extension=false},PointOnLineRelation{point=P, line=BC, isConstant=false, extension=true},EqualityRelation{∠AMN=(1/3*Pi)},PointOnLineRelation{point=M, line=BC, isConstant=false, extension=false},ProveConclusionRelation:[Proof: EqualityRelation{AM=MN}]

46, topic: FIG known AD is $ \ vartriangle ABC $ midline, $ \ angle ADC ={45 ^ \ circ} $, the $ \ vartriangle ABC $ along fold AD, point C falls on the position of point E , BE connection, if $ BC =6 $ cm #% # (1) a long seek BE;.?? #% # (2) when the $ AD =4 $ cm, find the area of the quadrilateral BDAE.

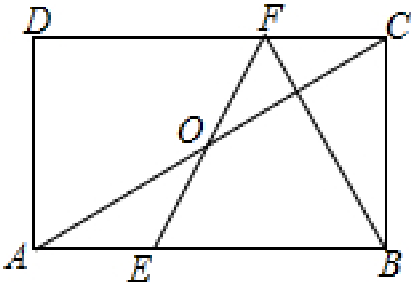


graph:
[{"variable-equals":{},"picturename":"1000001498_Q_1.jpg","collineations":{"0":"B###D###C"},"coordinates":{"D":"0.00,0.00","E":"0.00,3.00","A":"2.83,2.83","B":"-3.00,0.00","C":"3.00,0.00"}}]

NLP: TriangleRelation: △ABC, EqualityRelation {∠ADC =((1/4 * Pi))}, TurnoverRelation {start =C, segment =AD, target =E}, SegmentRelation: BE, EqualityRelation {BC =6}, MidianLineOfTriangleRelation {midianLine =AD, triangle =△ABC, top =A, bottom =BC}, EqualityRelation {BE =v_0}, evaluation (size) :(ExpressRelation: [key:] v_0), known conditions QuadrilateralRelation {quadrilateral =ADBE }, EqualityRelation {S_ADBE =v_1}, EqualityRelation {AD =4}, evaluation (size) :(ExpressRelation: [key:] v_1), SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] BE)}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] S_ADBE)}

47, topic: As shown in the rectangle ABCD, E, F are side AB, a point on the CD, AE =CF, connected

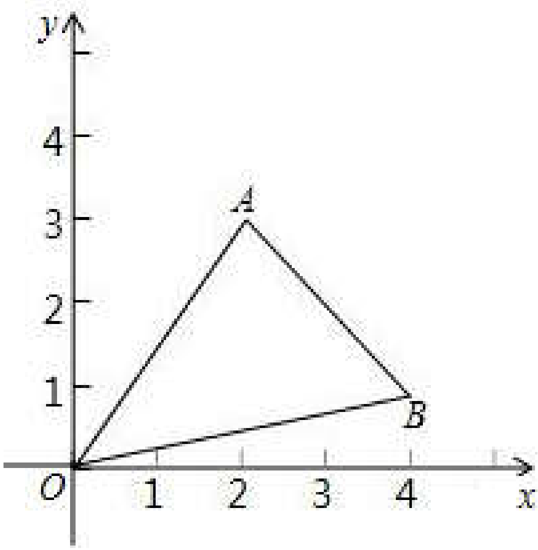
EF, BF, EF and diagonal line AC at point O, and BE =. BF, ∠BEF =2∠BAC #% # (1) Proof: OE =oF; #% # (2) when the $ BC =2 \ sqrt {3} $, long seeking AB #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000041785_Q_1.jpg","coordinates":{"A":"-6.00,0.00","B":"-0.00,0.00","C":"-0.00,3.46","D":"-6.00,3.46","E":"-4.00,0.00","F":"-2.00,3.46","O":"-3.00,1.73"},"collineations":{"0":"A###E###B","1":"D###F###C","2":"A###O###C","3":"F###O###E","4":"B###F","5":"D###A","6":"B###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: RectangleRelation{rectangle=Rectangle:ABCD},PointOnLineRelation{point=E, line=AB, isConstant=false, extension=false},PointOnLineRelation{point=F, line=CD, isConstant=false, extension=false},EqualityRelation{AE=CF},MultiPointCollinearRelation:[E, F],MultiPointCollinearRelation:[B, F],LineCrossRelation [crossPoint=Optional.of(O), iLine1=AC, iLine2=EF],EqualityRelation{BE=BF},EqualityRelation{∠BEO=2*∠EAO},EqualityRelation{AB=v_0},EqualityRelation{BC=2*(3^(1/2))},Calculation:(ExpressRelation:[key:]v_0),ProveConclusionRelation:[Proof: EqualityRelation{EO=FO}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]AB)}

48, topic: FIG, Cartesian coordinates in the plane $, coordinates A, B $ are two points $ A (2,3), B (4,1), $ $ △ABO $ Find the area.

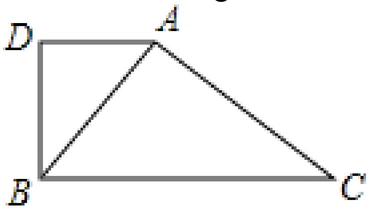


graph:
{"stem":{"pictures":[{"picturename":"1000024453_Q_1.jpg","coordinates":{"A":"2.00,3.00","B":"4.00,1.00","O":"0.00,0.00"},"collineations":{"0":"B###A","1":"O###B","2":"O###A"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: EqualityRelation {S_ △ABO =v_0}, PointRelation: A (2,3), PointRelation: B (4,1), evaluation (size) :(ExpressRelation: [key:] v_0), SolutionConclusionRelation {relation =seek value

(size) :(ExpressRelation: [key:] S_ △ABO)}

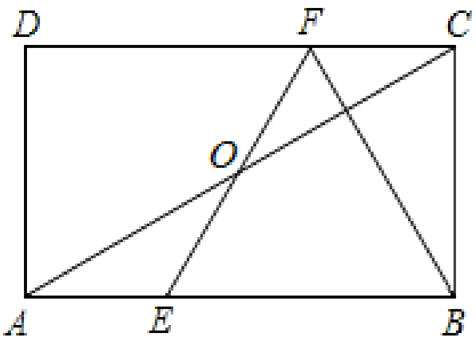
49, topic: As shown in the quadrangular ADBC, BC =2BD, BA equally ∠DBC, AB =AC, Proof: AD ⊥BD #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000035761_Q_1.jpg","coordinates":{"A":"3.00,3.00","B":"0.00,0.00","C":"6.00,0.00","D":"0.00,3.00"},"collineations":{"0":"A###D","1":"A###C","2":"B###A","3":"D###B","4":"B###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: known conditions QuadrilateralRelation {quadrilateral =ACBD}, EqualityRelation {BC =2 * BD}, AngleBisectorRelation {line =BA, angle =∠CBD, angle1 =∠ABC, angle2 =∠ABD}, EqualityRelation {AB =AC}, ProveConclusionRelation: [Proof: LinePerpRelation {line1 =AD, line2 =BD, crossPoint =D}]

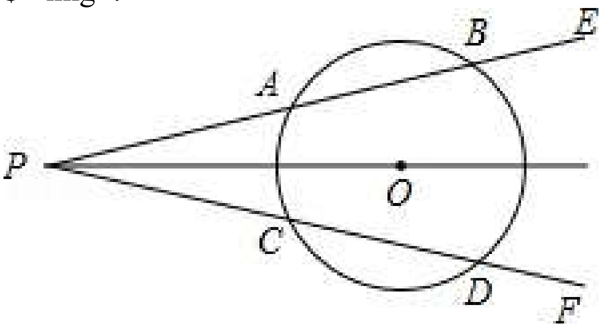
50, topic: as shown, the rectangular ABCD, E, F are side AB, a point on the CD, AE =CF, connected EF, BF, EF and diagonal line AC at point O, and BE =. BF, ∠BEF =2∠BAC #% # (1) Proof: OE =oF #% # (2) when the $ BC =2 \ sqrt {3} $, long seeking AB #% # <img>..



graph:
{"stem":{"pictures":[{"picturename":"1000035800_Q_1.jpg","coordinates":{"A":"-4.00,1.00","B":"2.00,1.00","C":"2.00,4.46","D":"-4.00,4.45","E":"-2.00,1.00","F":"0.00,4.46","O":"-1.00,2.73"},"collineations":{"0":"A###D","1":"B###F","2":"B###C","3":"A###O###C","4":"E###O###F","5":"D###F###C","6":"A###E###B"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: RectangleRelation{rectangle=Rectangle:ABCD},PointOnLineRelation{point=E, line=AB, isConstant=false, extension=false},PointOnLineRelation{point=F, line=CD, isConstant=false, extension=false},EqualityRelation{AE=CF},MultiPointCollinearRelation:[E, F],MultiPointCollinearRelation:[B, F],LineCrossRelation [crossPoint=Optional.of(O), iLine1=AC, iLine2=EF],EqualityRelation{BE=BF},EqualityRelation{∠BEO=2*∠EAO},EqualityRelation{AB=v_0},EqualityRelation{BC=2*(3^(1/2))},Calculation:(ExpressRelation:[key:]v_0),ProveConclusionRelation:[Proof: EqualityRelation{EO=FO}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]AB)}

51, topic: as shown, it is a known point O $ ∠EPF $ bisector point, the point P is outside the circle to the circle centered O $ ∠EPF $ sides respectively intersect at A, B and C, D. confirmation: $ AB =CD $ <img>.



graph:
{"substems":[],"stem":{"pictures":[{"circles":[{"center":"O","pointincircle":"A###B###C###D"}],"variable-equals":{},"picturename":"1000001519_Q_1.jpg","collineations":{"2":"A###O###B###D","1":"P###C###D###F","2":"P###O","0":"P###A###B###E"},"coordinates":{"D":"-11.28,5.65","E":"-9.49,9.01","F":"-9.49,4.99","A":"-13.42,7.57","B":"-11.28,8.35","C":"-13.42,6.43","O":"-12.00,7.00","P":"-15.00,7.00"}}]}}

NLP: AngleBisectorRelation{line=PO,angle=∠APC, angle1=∠APO, angle2=∠CPO},CircleCenterRelation{point=O, conic=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}},PointOutCircleRelation{point=Pcurve=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, points=[P]},LineCrossCircleRelation{line=EP, circle=⊙O, crossPoints=[A, B], crossPointNum=2},LineCrossCircleRelation{line=PF, circle=⊙O, crossPoints=[C, D], crossPointNum=2},ProveConclusionRelation:[Proof: EqualityRelation{AB=CD}]

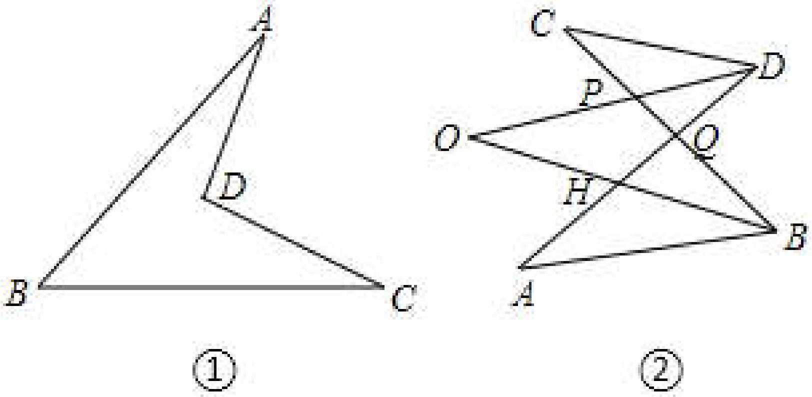
52, topic: Answer: (1) in FIG. 1, the square ABCD, the points E, F, respectively, in the BC side, a CD, $ ∠EAF =45 ° $, CD extension point G, so $ DG =BE $, . link EF, AG Proof: $ EF =FG $ #% # (2) in FIG. 2, the right isosceles triangle ABC, $ ∠BAC =90 ° $, $ AB =AC $, points M, N in the side the BC, and $ ∠MAN =45 ° $, if $ BM =1 $, $ CN =3 $, MN seeking long.

graph:
{"stem":{"pictures":[],"appliedproblems":{}},"substems":[{"substemid":"1","questionrelies":"","pictures":[{"picturename":"1000010197_Q_1.jpg","coordinates":{"A":"8.00,8.00","B":"0.00,8.00","C":"0.00,0.00","D":"8.00,0.00","E":"0.00,6.00","F":"3.20,0.00","G":"10.00,0.00"},"collineations":{"0":"A###B","1":"A###D","2":"A###G","3":"C###D###F###G","4":"A###E","5":"A###F","6":"B###C###E","7":"E###F"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},{"substemid":"2","questionrelies":"","pictures":[{"picturename":"1000010197_Q_2.jpg","coordinates":{"A":"8.00,8.00","B":"0.00,8.00","C":"0.00,0.00","M":"8.00,0.00","N":"0.00,6.00"},"collineations":{"0":"A###B","1":"A###C","2":"A###M","3":"B###M###N###C","4":"A###N"},"variable-equals":{},"circles":[]}],"appliedproblems":{}}]}

NLP: (ExpressRelation:[key:]1),SquareRelation{square=Square:ABCD},PointOnLineRelation{point=E, line=BC, isConstant=false, extension=false},PointOnLineRelation{point=F, line=CD, isConstant=false, extension=false},EqualityRelation{∠EAF=(1/4*Pi)},PointOnLineRelation{point=G, line=CD, isConstant=false, extension=true},EqualityRelation{DG=BE},SegmentRelation:EF,SegmentRelation:AG,EqualityRelation{MN=v_0},(ExpressRelation:[key:]2),IsoscelesRightTriangleRelation:IsoscelesRightTriangle:IsoscelesTriangle:△ABC[Optional.of(B)][Optional.of(B)],EqualityRelation{∠BAC=(1/2*Pi)},EqualityRelation{AB=AC},PointOnLineRelation{point=M, line=BC, isConstant=false, extension=false},PointOnLineRelation{point=N, line=BC, isConstant=false, extension=false},EqualityRelation{∠MAN=(1/4*Pi)},EqualityRelation{BM=1},EqualityRelation{CN=3},Calculation:(ExpressRelation:[key:]v_0),ProveConclusionRelation:[Proof:

EqualityRelation{EF=FG}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]MN)
}

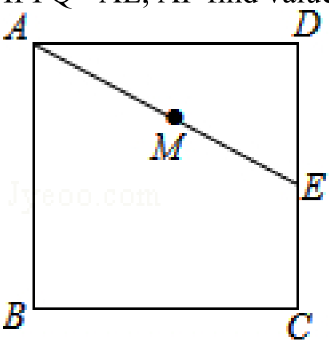
53, topic: (1) in FIG ① , ∠ADC =100 °, Determine ∠A + ∠B + ∠C degree;% # # (2) shown in FIG. ② , DO equally ∠CDA, BO equally ∠CBA, ∠A =20 °, ∠C =30 °, again seeking the degree ∠O. #% # <img>



graph:
{"stem":{"pictures":[],"appliedproblems":{}},"substems":[{"substemid":"1","questionrelies":"","pictures":[{"picturename":"1000051264_Q_1.jpg","coordinates":{"A":"-3.94,5.98","B":"-8.02,2.01","C":"-2.46,2.04","D":"-4.97,3.86"},"collineations":{"0":"A###B","1":"D###C","2":"B###C","3":"A###D"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},{"substemid":"2","questionrelies":"","pictures":[{"picturename":"1000051264_Q_2.jpg","coordinates":{"A":"-8.23,-5.37","B":"-4.82,-4.42","C":"-8.68,-1.91","D":"-3.76,-2.17","H":"-6.53,-4.16","O":"-9.17,-3.75","P":"-6.87,-3.08","Q":"-5.91,-3.71"},"collineations":{"0":"C###P###Q###B","1":"D###Q###H###A","2":"D###P###O","3":"O###H###B","4":"C###D","5":"A###B"},"variable-equals":{},"circles":[]}],"appliedproblems":{}}]}

NLP: EqualityRelation {∠ADC =(5/9 * Pi)}, evaluation (size) :(ExpressRelation: [key:] ∠BAD + ∠ABC + ∠BCD), AngleBisectorRelation {line =DO, angle =∠ADC, angle1 =∠ADO, angle2 =∠CDO}, AngleBisectorRelation {line =BO, angle =∠ABC, angle1 =∠ABO, angle2 =∠CBO}, EqualityRelation {∠BAD =(1/9 * Pi)}, EqualityRelation {∠BCD =(1/6 * Pi)}, find the size of the angle: AngleRelation {angle =∠O}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] ∠BAD + ∠ABC + ∠BCD)}, SolutionConclusionRelation { evaluation relation =(size) :(ExpressRelation: [key:] ∠O)}

54, topic: FIG side length of the square ABCD is 3cm, E point side of the CD, ∠DAE =30 °, the point M is the midpoint of AE, a straight line through the point M, respectively AD, BC intersect at a point P , Q. If PQ =AE, AP find value. #% # <img>

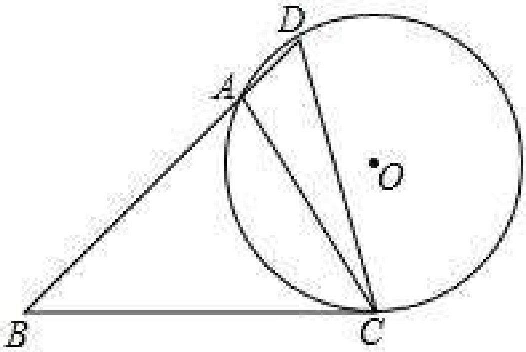


graph:

{"stem":{"pictures":[{"picturename":"1000035179_Q_1.jpg","coordinates":{"A":"-13.52,8.63","B":"-13.52,3.36","C":"-8.25,3.36","D":"-8.25,8.63","E":"-8.25,5.59","M":"-10.89,7.11","P":"-12.06,8.63","Q":"-9.02,3.36"},"collineations":{"0":"B###Q###C","1":"A###P###D","2":"A###M###E","3":"D###E###C","4":"A###B","5":"M###P","6":"M###Q","7":"Q###P"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: SquareRelation{square=Square:ABCD, length=3},PointOnLineRelation{point=E, line=CD, isConstant=false, extension=false},EqualityRelation{∠MAP=(1/6*Pi)},MiddlePointOfSegmentRelation{middlePoint=M,segment=AE},EqualityRelation{PQ=AE},Calculation:(ExpressRelation:[key:]AP),PointOnLineRelation{point=M, line=PM, isConstant=false, extension=false},LineCrossRelation [crossPoint=Optional.of(Q), iLine1=BC, iLine2=PM],LineCrossRelation [crossPoint=Optional.of(P), iLine1=AD, iLine2=PM],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]AP)}

55, topic: As shown in $ \ vartriangle ABC $ in, $ \ angle B =45 ^ \ circ $, $ \ angle ACB =60 ^ \ circ $, $ AB =3 \ sqrt {2} $, $ point $ BA $ D $ is a little extended line, and $ \ angle D =\ angle ACB $, $ \ odot O $ is $ \ vartriangle ACD $ circumscribed circle.? #% # (1) of seeking $ BC $ long;? #% # (2) seeking $ \ radius of odot O $.

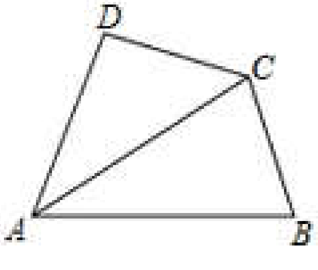


graph:

{"stem":{"pictures":[{"picturename":"1000010402_Q_1.jpg","coordinates":{"A":"0.00,3.00","B":"-3.00,0.00","C":"1.73,0.00","D":"0.73,0.73","O":"1.73,2.00"},"collineations":{"0":"B###A###D","1":"C###A","2":"C###D","3":"C###B"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"C###D###A"}]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleRelation:△ABC,EqualityRelation{∠ABC=(1/4*Pi)},EqualityRelation{∠ACB=(1/3*Pi)},EqualityRelation{AB=3*(2^(1/2))},PointOnLineRelation{point=D, line=BA, isConstant=false, extension=true},EqualityRelation{∠ADC=∠ACB},InscribedShapeOfCircleRelation{closedShape=△ACD, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}},EqualityRelation{BC=v_0},Calculation:(ExpressRelation:[key:]v_0),圆的半径：CircleRelation{circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]BC)},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]CO)}

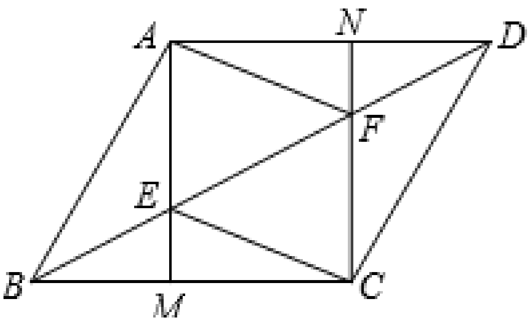
56, topic: quadrangle ABCD is known AB =a, AD =b, and a＞b, bisecting diagonals AC ∠BAD, DC =BC, Proof: ∠B + ∠D =180 ° #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000040373_Q_1.jpg","coordinates":{"A":"-5.95,-2.51","B":"-0.95,-2.51","C":"-1.80,0.58","D":"-4.52,2.27"},"collineations":{"0":"A###C","1":"A###D","2":"A###B","3":"B###C","4":"C###D"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP:
Know:QuadrilateralRelation{quadrilateral=ABCD},EqualityRelation{AB=a},EqualityRelation{AD=b},InequalityRelation{a>b},AngleBisectorRelation{line=AC,angle=∠BAD, angle1=∠BAC, angle2=∠CAD},EqualityRelation{CD=BC},ProveConclusionRelation:[Proof: EqualityRelation{∠ABC+∠ADC=(Pi)}]

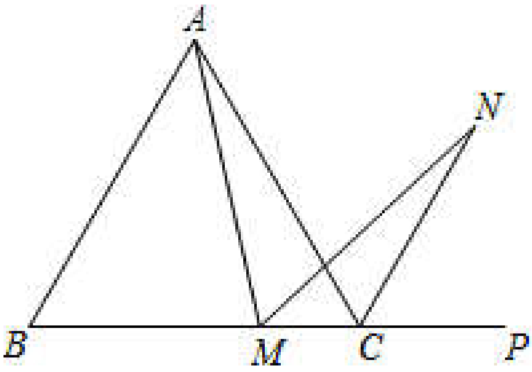
57, topic: FIG known parallelogram ABCD, A through M for AM⊥BC to, in cross-BD E, over C for CN⊥AD in N, in cross-F. BD, connected AF, CE #% # (. 1) Proof: AECF quadrilateral is a parallelogram;% # # (2) when the AECF rhombic, BC midpoint M of points, the degree of demand ∠CBD #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000050132_Q_1.jpg","coordinates":{"A":"-8.00,6.00","B":"-10.00,2.00","C":"-5.00,2.00","D":"-3.00,6.00","E":"-8.00,3.14","F":"-5.00,4.86","M":"-8.00,2.00","N":"-5.00,6.00"},"collineations":{"0":"A###N###D","1":"A###E###M","2":"C###F###N","3":"B###E###F###D","4":"B###M###C","5":"A###B","6":"A###F","7":"E###C","8":"D###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: ParallelogramRelation{parallelogram=Parallelogram:ABCD},LinePerpRelation{line1=AM, line2=BC, crossPoint=M},LineCrossRelation [crossPoint=Optional.of(E), iLine1=AM, iLine2=BD],LinePerpRelation{line1=CN, line2=AD, crossPoint=N},LineCrossRelation [crossPoint=Optional.of(F), iLine1=CN, iLine2=BD],SegmentRelation:AF,SegmentRelation:CE,RhombusRelation{rhombus=Rhombus:AECF},MiddlePointOfSegmentRelation{middlePoint=M,segment=BC},Calculation:AngleRelation{angle=∠EBM},ProveConclusionRelation:[Proof: ParallelogramRelation{parallelogram=Parallelogram:AECF}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]∠EBM)}

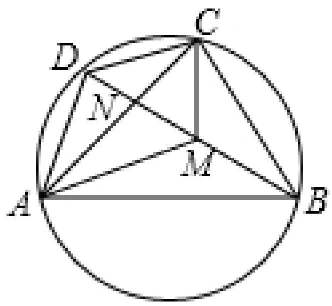
58, topic: FIG, equilateral triangle ABC, M is an arbitrary point on the BC side (free end B, C), P is a point on an extension line BC, N being ∠ACP bisector point. Known ∠AMN =60 ° (1) Prove:. AM =MN; (2) when moving in a straight line M, the above conclusion holds? If established, please drawing prove. #% ##% ##% # <img><img>



graph:
{"stem":{"pictures":[{"picturename":"1000040801_Q_1.jpg","coordinates":{"A":"-1.92,1.08","B":"-4.42,-3.25","C":"0.58,-3.25","P":"3.12,-3.25","M":"-1.14,-3.25","N":"2.21,-0.43"},"collineations":{"0":"A###B","1":"A###M","2":"C###A","3":"M###N","4":"B###M###C###P","5":"C###N"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: AngleBisectorRelation{line=CN,angle=∠ACP, angle1=∠ACN, angle2=∠NCP},PointRelation:C,RegularTriangleRelation:RegularTriangle:△ABC,PointOnLineRelation{point=M, line=BC, isConstant=false, extension=false},PointOnLineRelation{point=P, line=BC, isConstant=false, extension=true},EqualityRelation{∠AMN=(1/3*Pi)},ProveConclusionRelation:[Proof: EqualityRelation{AM=MN}]

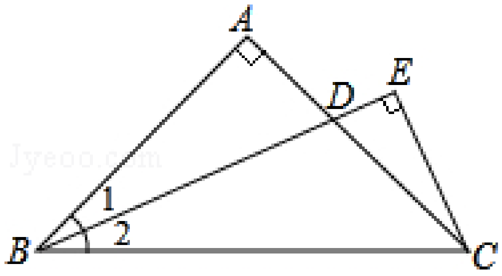
59, topic: As shown, the quadrilateral ABCD is given circle diagonals AC, BD at point N, the BD point M on the diagonal, and satisfies ∠BAM =∠DAN, ∠BCM =∠DCN . Proof: #% # (1) M is the midpoint of the BD; #% # (2) $ \ frac {AN} {CN} =\ frac {AM} {CM} $ #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000052577_Q_1.jpg","coordinates":{"A":"-0.86,1.29","B":"4.80,0.87","C":"2.42,4.98","D":"0.00,4.20","M":"2.40,2.54","N":"1.07,3.46","O":"2.04,2.01"},"collineations":{"0":"A###B","1":"A###D","2":"A###M","3":"C###D","4":"C###M","5":"C###B","6":"A###N###C","7":"D###N###M###B"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"A###B###C###D"}]}],"appliedproblems":{}},"substems":[]}

NLP: Know:QuadrilateralRelation{quadrilateral=ABCD},InscribedShapeOfCircleRelation{closedShape=ABCD, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}},LineCrossRelation [crossPoint=Optional.of(N), iLine1=AC, iLine2=BD],PointOnLineRelation{point=M, line=BD, isConstant=false, extension=false},EqualityRelation{∠BAM=∠DAN},EqualityRelation{∠BCM=∠DCN},ProveConclusionRelation:[Proof: MiddlePointOfSegmentRelation{middlePoint=M,segment=BD}],ProveConclusionRelation:[Proof: EqualityRelation{((AN)/(CN))=((AM)/(CM))}]

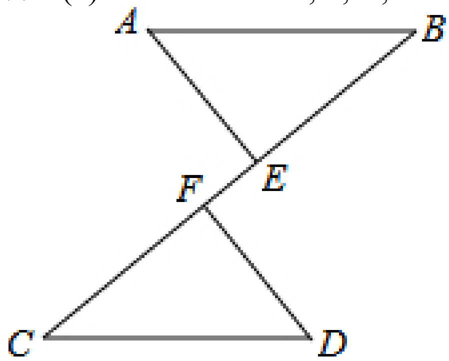
60, topic: Rt △ABC in the, ∠BAC =90 °, AB =AC, CE⊥BD extended line at point E, ∠1 =∠2 Proof: BD =2CE #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000027208_Q_1.jpg","coordinates":{"A":"3.00,3.00","B":"0.00,0.00","C":"6.00,0.00","D":"4.24,1.76","E":"5.12,2.12"},"collineations":{"0":"B###A","1":"B###C","2":"E###C","3":"A###D###C","4":"B###D###E"},"variable-equals":{"0":"∠1=∠ABD","1":"∠2=∠CBD"},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: RightTriangleRelation:RightTriangle:△ABC[Optional.of(A)],EqualityRelation{∠BAD=(1/2*Pi)},EqualityRelation{AB=AC},EqualityRelation{∠ABD=∠CBD},ProveConclusionRelation:[Proof: EqualityRelation{BD=2*CE}]

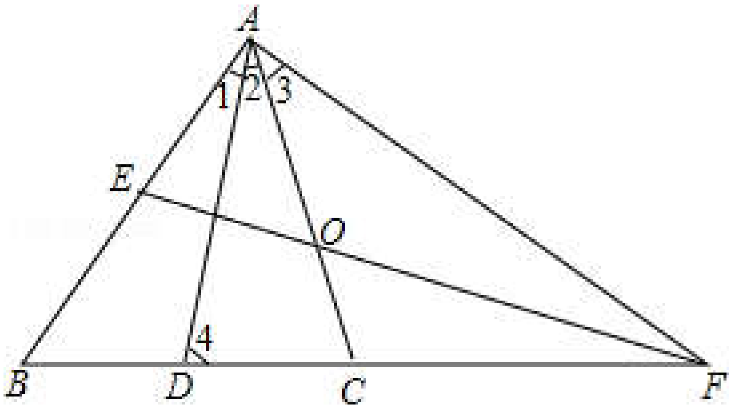
61, topic: FIG, AB∥CD, AB =CD, points E, F on BC, and BE =CF #% # (1) Prove:. △ABE≌ △DCF; #% # (2) Show that : in a, F, D, E is a quadrilateral parallelogram vertex #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000034182_Q_1.jpg","coordinates":{"A":"-7.96,6.01","B":"-1.96,6.01","C":"-9.92,0.08","D":"-3.92,0.08","E":"-5.34,3.49","F":"-6.55,2.59"},"collineations":{"0":"A###B","1":"A###E","2":"B###E###F###C","3":"F###D","4":"D###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: LineParallelRelation [iLine1=AB, iLine2=CD],EqualityRelation{AB=CD},PointOnLineRelation{point=E, line=BC, isConstant=false, extension=false},PointOnLineRelation{point=F, line=BC, isConstant=false, extension=false},EqualityRelation{BE=CF},ProveConclusionRelation:[Proof: TriangleCongRelation{triangleA=△ABE, triangleB=△DCF}],ProveConclusionRelation:[Proof: ParallelogramRelation{parallelogram=Parallelogram:AEDF}]

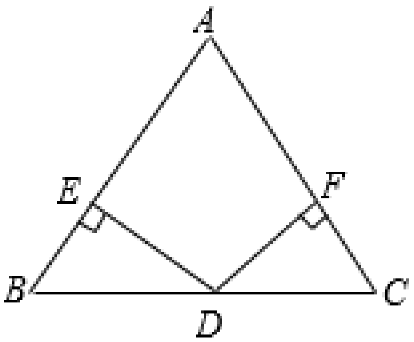
62, topic: FIG, AD is $ \triangle ABC $ angle bisector, AD AB in the perpendicular cross-points E, cross-point of an extension line BC in F, AC EF cross at point O. (1) Proof: $ \angle 3 = \angle B $; #% # (2) is connected OD, Proof: $ \angle B + \angle ODB = 180° $.



graph:
{"stem":{"pictures":[{"picturename":"1000026426_Q_1.jpg","coordinates":{"A":"5.00,5.00","B":"0.00,0.00","C":"6.00,0.00","D":"3.49,0.00","E":"2.91,2.91","F":"12.50,0.00","O":"5.58,2.09"},"collineations":{"0":"A###E###B","1":"B###D###C###F","2":"A###F","3":"A###D","4":"A###O###C","5":"E###O###F"},"variable-equals":{"0":"∠1=∠BAD","1":"∠2=∠DAC","2":"∠3=∠CAF"},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleRelation:△ABC,LineCrossRelation [crossPoint=Optional.of(O), iLine1=AC, iLine2=EF],AngleBisectorRelation{line=AD,angle=∠EAO, angle1=∠DAO, angle2=∠DAE},LineCrossRelation [crossPoint=Optional.of(F), iLine1=BC, iLine2=FE],LineCrossRelation [crossPoint=Optional.absent(), iLine1=AD, iLine2=FE],LineCrossRelation [crossPoint=Optional.of(E), iLine1=AB, iLine2=FE],SegmentRelation:OD,ProveConclusionRelation:[Proof: EqualityRelation{∠FAO=∠DBE}],ProveConclusionRelation:[Proof: EqualityRelation{∠DBE+∠ODB=(Pi)}]

63, topic: FIG: the known △ABC, ∠B =∠C, D is the midpoint of the side BC, through the point D as $ DE \ bot AB $, $ DF \ bot AC $, respectively pedal . E, F #% # (1) Proof: △BED≌ △CFD; #% # bisector (2) in a point D ∠A it? If the Please explain the reasons. #% # <Img>

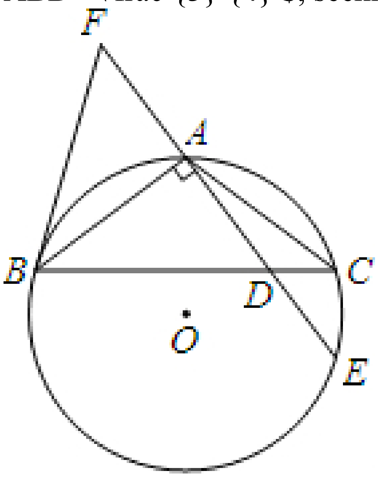


graph:
{"stem":{"pictures":[{"picturename":"1000040794_Q_1.jpg","coordinates":{"A":"-2.27,3.39","B":"-5.27,-1.01","C":"0.73,-1.01","D":"-2.27,-1.01","E":"-4.31,0.39","F":"-0.22,0.39"},"collineations":{"0":"A###E###B","1":"F###C###A","2":"E###D","3":"B###D###C","4":"F###D"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: EqualityRelation{∠DBE=∠DCF},MiddlePointOfSegmentRelation{middlePoint=D,segment=BC},LinePerpRelation{line1=DE, line2=AB, crossPoint=E},LinePerpRelation{line1=DF, line2=AC, crossPoint=F},ProveConclusionRelation:[Proof: TriangleCongRelation{triangleA=△BED, triangleB=△CFD}],ProveConclusionRelation:[AngleBisectorRelation{line=DA,angle=∠EAF, angle1=∠

DAE, angle2=∠DAF}]

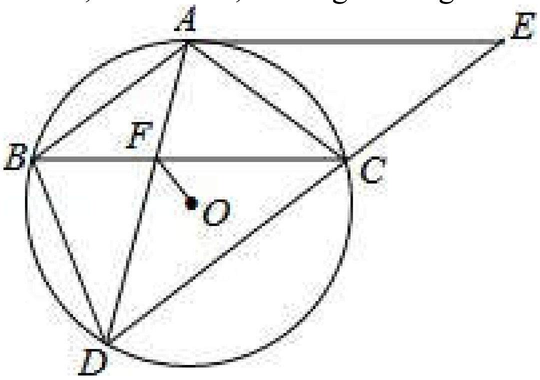
64, topic: As shown in the △ABC, AB =AC, $ \ odot O $ is the circumcircle of △ABC, AE⊥AB BC at points D, deposit $ \ odot O $ at points E, F in DA extension line, and AF =AD. when AF =3, $ \ tan \ angle ABD =\ frac {3} {4} $, seeking $ \ odot O $ diameter. #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000060745_Q_1.jpg","coordinates":{"A":"0.00,3.33","B":"-3.20,0.93","C":"3.20,0.93","D":"1.80,0.93","E":"3.20,-0.93","F":"-1.80,5.73","O":"0.00,0.00"},"collineations":{"0":"F###A###D###E","1":"B###C###D","2":"A###C","3":"A###B","4":"B###F"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"A###B###C###E"}]}],"appliedproblems":{}},"substems":[]}

NLP:
TriangleRelation:△ABC,EqualityRelation{AB=AC},InscribedShapeOfCircleRelation{closedShape=△ABC, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}},LinePerpRelation{line1=AE, line2=AB, crossPoint=A},LineCrossRelation [crossPoint=Optional.of(D), iLine1=AE, iLine2=BC],LineCrossCircleRelation{line=AE, circle=⊙O, crossPoints=[E], crossPointNum=1},PointOnLineRelation{point=F, line=DA, isConstant=false, extension=true},EqualityRelation{AF=AD},EqualityRelation{AF=3},EqualityRelation{tan(∠ABD)=(3/4)}, 圆的直径：CircleRelation{circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}},SolutionConclusionRelation{relation=圆的直径：CircleRelation{circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}}}

65, topic: As shown, the contact with the $ △ABC $ $ ⊙O $, $ AB =AC $, BD is $ ⊙O $ chord, and $ AB // CD $, through the point A as the $ ⊙O $ DC and AE tangent extension lines intersect at point E, AD and BC at point F.?#%#(1) Proof: ABCE $ $ quadrilateral is a parallelogram;% # # (2) when the $ AE =6 $? , $ CD =5 $, seeking oF longer.

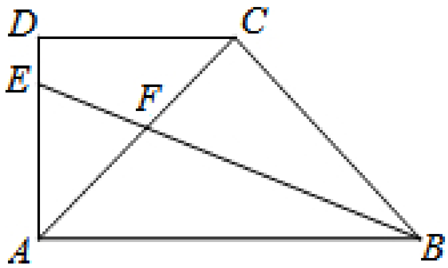


graph:

{"stem":{"pictures":[{"picturename":"1000026291_Q_1.jpg","coordinates":{"A":"0.00,3.50","B":"-3.00,1.80","C":"3.00,1.80","D":"-3.09,-1.64","E":"6.00,3.50","F":"-1.02,1.80","O":"0.00,0.00"},"collineations":{"0":"C###A","1":"C###B###F","2":"C###E###D","3":"D###A###F","4":"A###B","5":"O###F","6":"D###B","7":"C###E","8":"E###A"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"B###C###D###A"}]}],"appliedproblems":{}},"substems":[]}

NLP: InscribedShapeOfCircleRelation{closedShape=△ABC, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}},EqualityRelation{AB=AC},ChordOfCircleRelation{chord=BD, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, chordLength=null,straightLine=null},LineParallelRelation [iLine1=AB, iLine2=CD],LineContactCircleRelation{line=AE, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, contactPoint=Optional.of(A), outpoint=Optional.of(E)},LineCrossRelation [crossPoint=Optional.of(E), iLine1=AE, iLine2=DC],LineCrossRelation [crossPoint=Optional.of(F), iLine1=AD, iLine2=BC],EqualityRelation{FO=v_0},EqualityRelation{AE=6},EqualityRelation{CD=5},Calculation:(ExpressRelation:[key:]v_0),ProveConclusionRelation:[Proof: ParallelogramRelation{parallelogram=Parallelogram:ABCE}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]FO)}

66, topic: as shown in the right trapezoid ABCD, DC // AB, ∠DAB =90 °, AC⊥BC, AC =BC, ∠ABC respectively cross the bisector AD, AC at points E, F, seeking $ \ frac {BF} the value {EF} $. #% # <img>

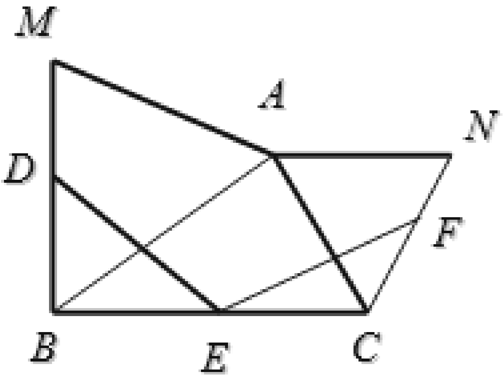


graph:

{"stem":{"pictures":[{"picturename":"1000001262_Q_1.jpg","coordinates":{"A":"-8.35,2.76","B":"-8.34,2.36","C":"-8.28,0.40","D":"-3.55,0.53","E":"-5.98,2.83","F":"-6.93,1.82"},"collineations":{"0":"B###A","1":"B###F###E","2":"C###D","3":"A###F###C","4":"B###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: RightTrapezoidRelation{rightTrapezoid=RightTrapezoid:ABCD randomOrder:true},LineParallelRelation [iLine1=DC, iLine2=AB],EqualityRelation{∠DAB=(1/2*Pi)},LinePerpRelation{line1=AC, line2=BC, crossPoint=C},EqualityRelation{AC=BC},Calculation:(ExpressRelation:[key:]((BF)/(EF))),LineCrossRelation [crossPoint=Optional.of(F), iLine1=AC, iLine2=FE],AngleBisectorRelation{line=FE,angle=∠ABC, angle1=∠ABF, angle2=∠CBF},LineCrossRelation [crossPoint=Optional.of(E), iLine1=AD, iLine2=FE],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]((BF)/(EF)))}

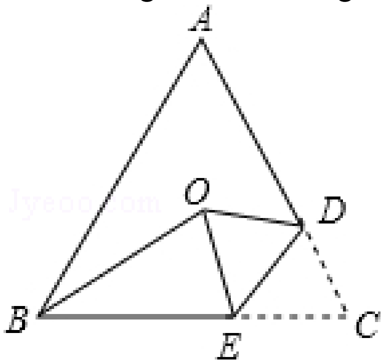
67, topic: Given: FIG, △ABC is an acute triangle respectively AB, AC side to the outside as an equilateral triangle and an equilateral triangle ABM CAN.D, E, F are the MB, BC, CN's. point link DE, EF #% # Proof: DE =EF #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000040184_Q_1.jpg","coordinates":{"A":"-2.73,6.83","B":"-6.75,3.94","C":"-1.03,3.92","D":"-6.99,6.40","E":"-3.89,3.93","F":"-0.19,5.38","M":"-7.23,8.87","N":"0.64,6.84"},"collineations":{"0":"A###B","1":"A###M","2":"A###C","3":"A###N","4":"M###D###B","5":"B###E###C","6":"E###D","7":"E###F","8":"N###F###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP:
AcuteTriangleRelation:AcuteTriangle:△ABC,MiddlePointOfSegmentRelation{middlePoint=D,segment=MB},MiddlePointOfSegmentRelation{middlePoint=E,segment=BC},MiddlePointOfSegmentRelation{middlePoint=F,segment=CN},SegmentRelation:DE,SegmentRelation:EF,ProveConclusionRelation:[Proof: EqualityRelation{DE=EF}]

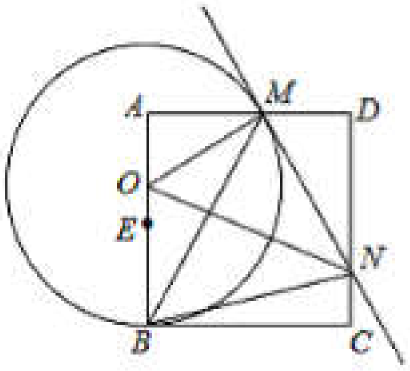
68, topic: As shown, the isosceles triangle ABC, AB =AC, the △ABC DE folded along the corner at the intersection point O falls vertex C perpendicular bisectors of the sides of a triangle when BE =BO, seeking. ∠ABC degree. #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000027235_Q_1.jpg","coordinates":{"A":"3.00,5.00","B":"0.00,0.00","C":"6.00,0.00","D":"4.98,1.70","E":"4.07,0.00","O":"3.00,1.60"},"collineations":{"0":"A###B","1":"C###E###B","2":"A###C###D","3":"O###E","4":"O###D","5":"E###D","6":"O###B"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: IsoscelesTriangleRelation: IsoscelesTriangle: △ABC [Optional.of (A)], EqualityRelation {AB =AC}, EqualityRelation {BE =BO}, ANGULAR size: AngleRelation {angle =∠ABE}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] ∠ABE)}

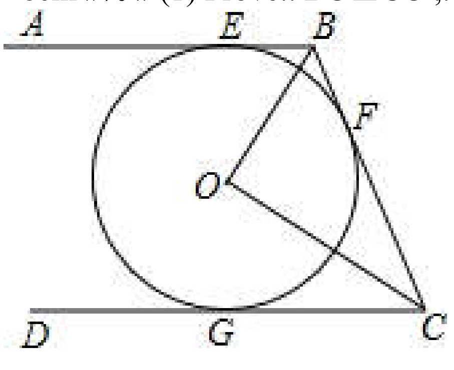
69, topic: FIG known square ABCD, point E is the midpoint of the side AB, the point O is a fixed point on the line segment AE (not the point A, E coincidence) to O as the center, radius of the OB AD edge circle and intersect at points M, M through the point for $ ⊙O $ tangent to the cross-point DC N, connected OM, oN, BM, BN. credited $ \triangle MNO $, $ \triangle AOM $, $ \triangle DMN $ of .? area are $ {{S} _ {1}} $, $ {{S} _ {2}} $, $ {{S} _ {3}} $ #% # (1) Proof: $ \triangle AOM \backsim \triangle DMN $; #% # (2) Prove:? $ MN =AM + CN $.



graph: {"stem":{"pictures":[{"picturename":"1000025034.jpg","coordinates":{"A":"0.00,4.00","B":"0.00,0.00","C":"4.00,0.00","D":"4.00,4.00","E":"0.00,2.00"},"collineations":{"0":"B###E###A","1":"B###C","2":"D###A","3":"D###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: CircleCenterRelation{point=O, conic=Circle[⊙O_1]{center=O_1, analytic=(x-x_O_1)^2+(y-y_O_1)^2=r_O_1^2}},RadiusRelation{radius=OB, circle=Circle[⊙O_1]{center=O_1, analytic=(x-x_O_1)^2+(y-y_O_1)^2=r_O_1^2}, length=null},PointRelation:A,PointRelation:E,SquareRelation{square=Square:ABCD},MiddlePointOfSegmentRelation{middlePoint=E,segment=AB},PointOnLineRelation{point=O, line=AE, isConstant=false, extension=false},LineCrossCircleRelation{line=AD, circle=⊙O_1, crossPoints=[M], crossPointNum=1},MultiPointCollinearRelation:[O, M],MultiPointCollinearRelation:[O, N],MultiPointCollinearRelation:[B, M],MultiPointCollinearRelation:[B, N],EqualityRelation{S_△MNO=S_1},EqualityRelation{S_△AMO=S_2},EqualityRelation{S_△DMN=S_3},ProveConclusionRelation:[Proof: TriangleSimilarRelation{triangleA=△AOM, triangleB=△DMN}],ProveConclusionRelation:[Proof: EqualityRelation{MN=AM+CN}]

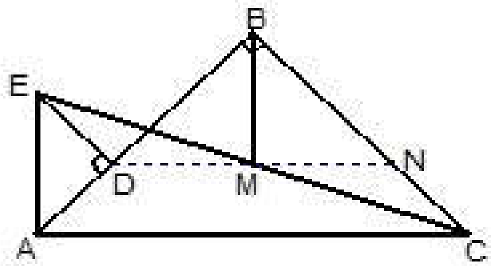
70, topic: FIG, AB, BC, CD respectively ⊙O tangent to point E, F, G, and AB // CD, BO =6cm, CO =8cm #% # (1) Prove:. BO ⊥ CO ;. #% # (2) the long seek BE and CG #% # <img>



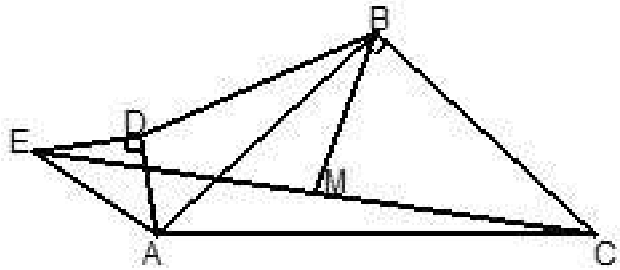
graph: {"stem":{"pictures":[{"picturename":"1000001262_Q_1.jpg","coordinates":{"A":"-8.14,1.33","B":"-2.79,3.81","C":"0.50,0.04","D":"-5.73,-2.84","E":"-4.42,3.05","F":"-1.60,2.45","G":"-2.40,-1.30","O":"-3.41,0.87"},"collineations":{"0":"A###E###B","1":"D###G###C","2":"B###F###C","3":"B###O","4":"C###O"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"E###F###G"}]}],"appliedproblems":{}},"substems":[]}

NLP: LineContactCircleRelation{line=AB, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, contactPoint=Optional.of(E), outpoint=Optional.absent()},LineContactCircleRelation{line=BC, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, contactPoint=Optional.of(F), outpoint=Optional.absent()},LineContactCircleRelation{line=CD, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, contactPoint=Optional.of(G), outpoint=Optional.absent()},LineParallelRelation [iLine1=AB, iLine2=CD],EqualityRelation{BO=6},EqualityRelation{CO=8},Calculation:(ExpressRelation:[key:]BE),Calculation:(ExpressRelation:[key:]CG),ProveConclusionRelation:[Proof: LinePerpRelation{line1=BO, line2=CO, crossPoint=O}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]BE)},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]CG)}

71, topic: known:. $ \triangle ABC $ and $ \triangle ADE $ are right isosceles triangle, $ \angle ABC = \angle ADE = 90° $, point M is the midpoint of CE, connected to BM (1) in FIG. ① , point D on AB, DM connection, and extend DM BC at point N. Proof: $ \triangle EDM \cong \triangle CNM $; under the condition (1), the BD and tried to explore the BM% # # (2) What kind of relationship exists between the number and give proof; #% # (3) as shown in ② , the point D is not AB, (2) the conclusions also set it? If true, please prove; if not satisfied, the reasons.



图①



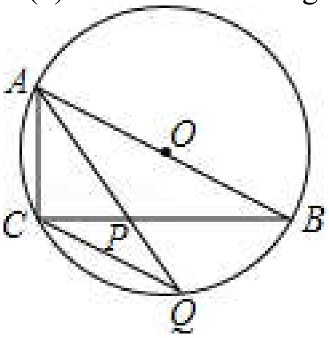
图②

graph:
{"stem":{"pictures":[],"appliedproblems":{}},"substems":[{"substemid":"1","questionrelies":"","pictures":[{"picturename":"1000027835_Q_1.jpg","coordinates":{"A":"-4.00,0.00","B":"0.00,4.00","C":"4.00,0.00","D":"-2.00,2.00","E":"-4.00,4.00","M":"0.00,2.00","N":"2.00,2.00"},"collineations":{"0":"B###D###A","1":"B###N###C","2":"M###B","3":"D###M###N","4":"E###D","5":"C###M###E"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},{"substemid":"2","questionrelies":"","pictures":[{"picturename":"3A_20(2).jpg","coordinates":{"A":"-4.00,0.00","B":"0.00,4.00","C":"4.00,0.00","D":"-5.00,3.00","E":"-8.00,2.00","M":"-2.00,1.00"},"collineations":{"0":"B###D","1":"E###D","2":"A###D","3":"A###B","4":"A###C","5":"E###A","6":"B###M","7":"C###B"},"variable-equals":{},"circles":[]}],"appliedproblems":{}}]}

NLP:
IsoscelesRightTriangleRelation:IsoscelesRightTriangle:IsoscelesTriangle:△ABC[Optional.of(B)][Optional.of(B)],IsoscelesRightTriangleRelation:IsoscelesRightTriangle:IsoscelesTriangle:△ADE[Optional.of(D)][Optional.of(D)],MultiEqualityRelation [multiExpressCompare=∠DBN=∠ADE=(1/2*Pi), originExpressRelationList=[], keyWord=null, result=null],MiddlePointOfSegmentRelation{middlePoint=M,segment=CE},SegmentRelation:BM,PointOnLineRelation{point=D, line=AB, isConstant=false, extension=false},LineCrossRelation [crossPoint=Optional.of(N), iLine1=BC, iLine2=DM],Calculation:(ExpressRelation:[key:](BD/BM)),NegativeRelation{relation=PointOnLineRelation{point=D, line=AB, isConstant=false, extension=false}},ProveConclusionRelation:[Proof: TriangleCongRelation{triangleA=△EDM, triangleB=△CNM}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:](BD/BM))}

72, topic: FIG, AB is the diameter of ⊙O, $\angle BAC$ AQ bisector of BC at the point P, at point cross ⊙O Q, known AC =6, $\angle AQC = 30°$ #% # (1.) long seek AB;% # # (2) find the distance AB of the point P;. #%

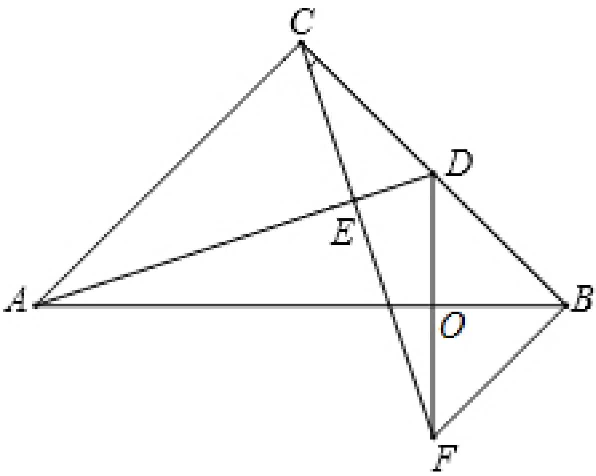
(3) Determine the length PQ #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000080883_Q_1.jpg","coordinates":{"A":"-2.46,1.72","B":"2.46,-1.72","C":"-2.72,-1.27","O":"0.00,0.00","P":"-0.99,-1.42","Q":"-0.26,-2.99"},"collineations":{"0":"A###C","1":"A###O###B","2":"C###P###B","3":"C###Q","4":"A###P###Q"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: AngleBisectorRelation {line =AQ, angle =∠CAO, angle1 =∠CAQ, angle2 =∠OAQ}, DiameterRelation {diameter =AB, circle =Circle [⊙O] {center =O, analytic =(x-x_O) ^ 2+ (y-y_O) ^ 2 =r_O ^ 2}, length =null}, LineCrossRelation [crossPoint =Optional.of (P), iLine1 =AQ, iLine2 =BC], LineCrossCircleRelation {line =AQ, circle =⊙O , crossPoints =[Q], crossPointNum =1}, EqualityRelation {AC =6}, EqualityRelation {∠CQP =(1/6 * Pi)}, EqualityRelation {AB =v_0}, evaluation (size) :(ExpressRelation: [key:] v_0), distance, seeking distance: PointToLineDistanceRelation {point =P, line =AB, distance =null}, EqualityRelation {PQ =v_1}, evaluation (size) :(ExpressRelation: [key:] v_1), SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] AB)}, SolutionConclusionRelation {relation =distance, seeking distance: PointToLineDistanceRelation {point =P, line =AB, distance =null}}, SolutionConclusionRelation {relation =seek value (size) :(ExpressRelation: [key:] PQ)}

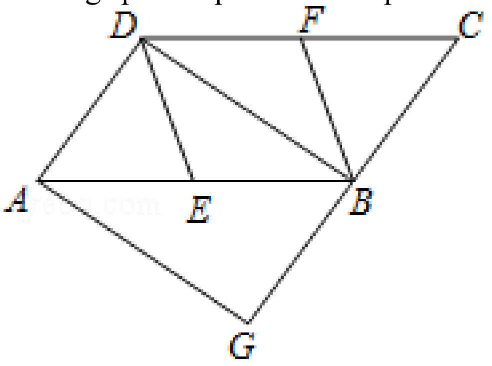
73, topic: As shown in the Rt △ABC, ∠ACB =90 °, AC =BC, point D is the midpoint of BC, CE⊥AD in E, BF // AC CE extension lines cross at point F. verify : AB perpendicular bisector DF #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000080528_Q_1.jpg","coordinates":{"A":"0.00,0.00","B":"6.35,0.00","C":"3.17,3.17","D":"4.76,1.59","E":"3.81,1.27","F":"4.76,-1.59","O":"4.76,0.00"},"collineations":{"0":"A###E###D","1":"A###O###B","2":"C###E###F","3":"D###O###F","4":"C###D###B","5":"C###A","6":"F###B"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: RightTriangleRelation:RightTriangle:△ABC[Optional.of(C)],EqualityRelation{∠ACD=(1/2*Pi)},EqualityRelation{AC=BC},MiddlePointOfSegmentRelation{middlePoint=D,segment=BC},LinePerpRelation{line1=CE, line2=AD, crossPoint=E},LineParallelRelation [iLine1=BF, iLine2=AC],LineCrossRelation [crossPoint=Optional.of(F), iLine1=BF, iLine2=CE],ProveConclusionRelation:[MiddlePerpendicularRelation [iLine1=AB, iLine2=DF, crossPoint=Optional.of(O)]]

74, topic: As shown, the quadrilateral ABCD, E, F, respectively sides AB, CD, midpoint, △ADE≌△CBF, cross-over point A as AG // BD extension line CB at point G #% #. (1) Proof: quadrilateral ABCD is a parallelogram; #% # (2) Proof: DE // BF; #% # (3) when the quadrilateral BEDF a diamond, it is nothing special quadrilateral quadrilateral AGBD and prove your conclusion #?. % # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000080197.jpg","coordinates":{"A":"-5.00,2.00","B":"-2.00,2.00","C":"-1.00,4.00","D":"-4.00,4.00","E":"-3.50,2.00","F":"-2.50,4.00","G":"-3.00,0.00"},"collineations":{"0":"A###E###B","1":"D###F###C","2":"A###G","3":"B###G","4":"A###D","5":"B###C","6":"D###E","7":"D###B","8":"B###F"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: Know:QuadrilateralRelation{quadrilateral=ABCD},MiddlePointOfSegmentRelation{middlePoint=E,segment=AB},MiddlePointOfSegmentRelation{middlePoint=F,segment=CD},TriangleCongRelation{triangleA=△ADE, triangleB=△CBF},PointOnLineRelation{point=A, line=AG, isConstant=false, extension=false},LineParallelRelation [iLine1=AG, iLine2=BD],LineCrossRelation [crossPoint=Optional.of(G), iLine1=AG, iLine2=CB],RhombusRelation{rhombus=Rhombus:BEDF},ProveConclusionRelation:[Proof: ParallelogramRelation{parallelogram=Parallelogram:ABCD}],ProveConclusionRelation:[Proof: LineParallelRelation [iLine1=DE, iLine2=BF]],ShapeJudgeConclusionRelation{geoEle=ADBG}

75, topic: 1, in the square ABCD, E, F are the AD side, a point on the DC, and $ AF⊥BE $ #% # (1) Prove:. $ AF =BE $; #% # (2) in FIG. 2, in the square ABCD, M, N, P, Q are side AB, BC, CD, points on the DA, and NQ $ MP⊥NQ $ .MP the same? reasons.

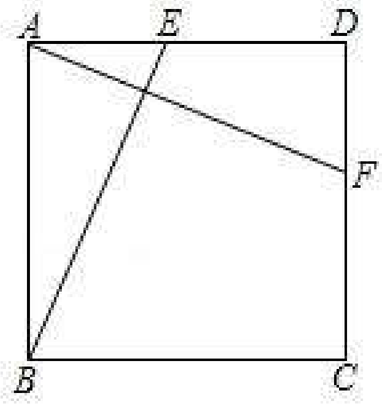


图1

graph:
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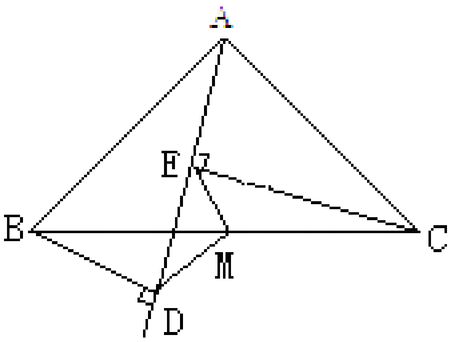
NLP: SquareRelation{square=Square:ABCD},PointOnLineRelation{point=E, line=AD, isConstant=false, extension=false},PointOnLineRelation{point=F, line=DC, isConstant=false, extension=false},LinePerpRelation{line1=AF, line2=BE, crossPoint=},(ExpressRelation:[key:]2),SquareRelation{square=Square:ABCD},PointOnLineRelation{point=M, line=AB, isConstant=false, extension=false},PointOnLineRelation{point=N, line=BC, isConstant=false, extension=false},PointOnLineRelation{point=P, line=CD, isConstant=false, extension=false},PointOnLineRelation{point=Q, line=DA, isConstant=false, extension=false},LinePerpRelation{line1=MP, line2=NQ, crossPoint=},EqualityRelation{MP=NQ},ProveConclusionRelation:[Proof: EqualityRelation{AF=BE}]

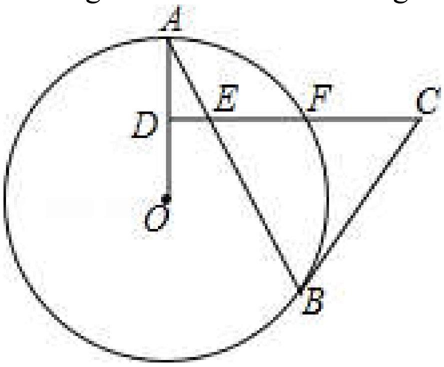
76, topic: FIG known, △ABC medium, CE⊥AD in E, BD⊥AD in D, BM =CM Proof: ME =MD #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000040695_Q_1.jpg","coordinates":{"A":"-6.35,5.21","B":"-9.00,2.00","C":"-4.00,2.00","D":"-7.26,1.57","E":"-6.97,2.74","M":"-6.50,2.00"},"collineations":{"0":"A###B","1":"A###C","2":"B###M###C","3":"A###E###D","4":"D###B","5":"D###M","6":"M###E","7":"E###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleRelation:△ABC,LinePerpRelation{line1=CE, line2=AD, crossPoint=E},LinePerpRelation{line1=BD, line2=AD, crossPoint=D},EqualityRelation{BM=CM},ProveConclusionRelation:[Proof: EqualityRelation{EM=DM}]

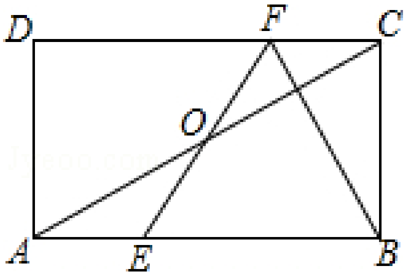
77, topic: FIG, chord AB is ⊙O, OA D is the midpoint of the radius, through the D chord AB as CD⊥ OA cross at point E, in cross ⊙O point F, and CE =CB #% #. (1) Proof: BC is tangent ⊙O;% # # (2) connected to AF, BF, seeking a degree ∠ABF; #% # (3) if CD =15, bE =10, $ \ sin a =\ frac {5} {13} $, seeking ⊙O radius. #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000039846_Q_1.jpg","coordinates":{"A":"0.00,1.96","B":"1.55,-1.20","C":"3.24,0.98","D":"0.00,0.98","E":"0.48,0.98","F":"1.70,0.98","O":"0.00,0.00"},"collineations":{"0":"A###D###O","1":"D###E###F###C","2":"A###E###B","3":"B###C"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"A###B###F"}]}],"appliedproblems":{}},"substems":[]}

NLP: RadiusRelation{radius=OA, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, length=null},ChordOfCircleRelation{chord=AB, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, chordLength=null,straightLine=null},ChordOfCircleRelation{chord=AB, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, chordLength=null,straightLine=null},MiddlePointOfSegmentRelation{middlePoint=D,segment=OA},LineCrossRelation [crossPoint=Optional.of(E), iLine1=CD, iLine2=AB],LinePerpRelation{line1=CD, line2=OA, crossPoint=D},LineCrossCircleRelation{line=CD, circle=⊙O, crossPoints=[F], crossPointNum=1},EqualityRelation{CE=BC},SegmentRelation:AF,SegmentRelation:BF,Calculation:AngleRelation{angle=∠ABF},EqualityRelation{CD=15},EqualityRelation{BE=10},EqualityRelation{sin(∠DAE)=(5/13)},圆的半径：CircleRelation{circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}},ProveConclusionRelation:[Proof: LineContactCircleRelation{line=BC, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, contactPoint=Optional.of(B), outpoint=Optional.of(C)}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]∠ABF)},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]AO)}

78, topic: As shown in the rectangle ABCD, E, F are side AB, a point on the CD, AE =CF, connected EF, BF, EF and diagonal line AC at point O, and BE =BF, $ \ angle BEF =2 \ angle BAC $ #% # (1) Prove:. OE =oF; #% # (2) seeking $ \ angle EBF $ degree; #% # (3) if $ BC =2 \ sqrt {3} $, find the area of the rectangle ABCD. #% # <img>



graph:
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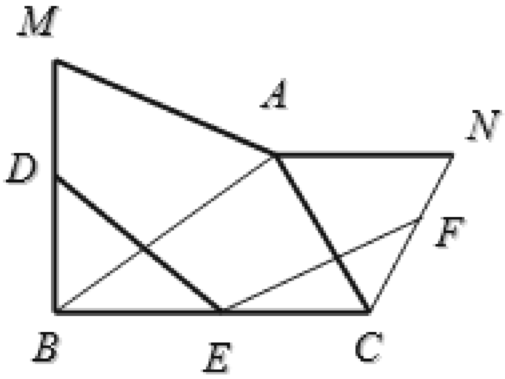
NLP: RectangleRelation{rectangle=Rectangle:ABCD},PointOnLineRelation{point=E, line=AB, isConstant=false, extension=false},PointOnLineRelation{point=F, line=CD, isConstant=false, extension=false},EqualityRelation{AE=CF},MultiPointCollinearRelation:[E, F],MultiPointCollinearRelation:[B, F],LineCrossRelation [crossPoint=Optional.of(O), iLine1=AC, iLine2=EF],EqualityRelation{BE=BF},EqualityRelation{∠BEO=2*∠EAO},Calculation:AngleRelation{angle=∠EBF},RectangleRelation{rectangle=Rectangle:ABCD},EqualityRelation{S_ABCD=v_0},EqualityRelation{BC=2*(3^(1/2))},Calculation:(ExpressRelation:[key:]v_0),ProveConclusionRelation:[Proof: EqualityRelation{EO=FO}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]∠EBF)},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]S_ABCD)}

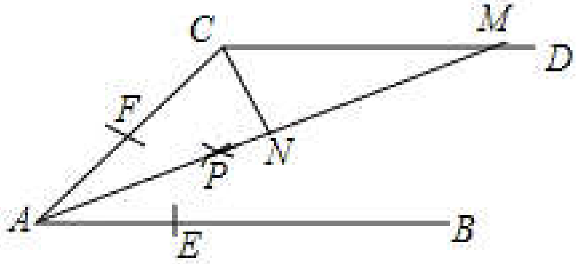
79, topic: Given: FIG known △ACN, △ABM equilateral triangle, D, E, F, respectively, is the midpoint of BM, BC, CN Verification of:.. DE =EF #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000040184_Q_1.jpg","coordinates":{"A":"-2.73,6.83","B":"-6.75,3.94","C":"-1.03,3.92","D":"-6.99,6.40","E":"-3.89,3.93","F":"-0.19,5.38","M":"-7.23,8.87","N":"0.64,6.84"},"collineations":{"0":"A###B","1":"A###M","2":"A###C","3":"A###N","4":"M###D###B","5":"B###E###C","6":"E###D","7":"E###F","8":"N###F###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleRelation:△ACN,RegularTriangleRelation:RegularTriangle:△ABM,MiddlePointOfSegmentRelation{middlePoint=D,segment=BM},MiddlePointOfSegmentRelation{middlePoint=E,segment=BC},MiddlePointOfSegmentRelation{middlePoint=F,segment=CN},ProveConclusionRelation:[Proof: EqualityRelation{DE=EF}]

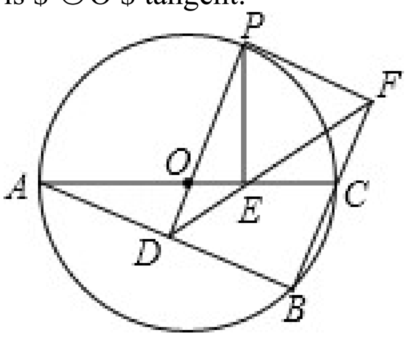
80, topic: FIG, AB // CD, with A as the center, is less than the radius of the AC draw an arc length, respectively, cross-AB, AC at points E, F, respectively, then E, F as the center, greater than $ \ frac { 1} {2} EF $ draw an arc radius length, two arc at point P, rays cross CD at point AP M #% # (1) if ∠ACD =114 °, the degree of seeking ∠MAB;. #% # (2) if CN⊥AM, pedal is N, Proof: . △ACN≌ △MCN #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000072666_Q_1.jpg","coordinates":{"A":"0.00,0.00","B":"5.00,0.00","C":"1.34,3.00","D":"6.00,3.00","E":"1.00,0.00","F":"0.41,0.91","M":"4.63,3.00","N":"2.31,1.50","P":"1.63,1.06"},"collineations":{"0":"B###E###A","1":"A###F###C","2":"C###M###D","3":"C###N","4":"A###P###N###M"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: EqualityRelation{AC=v_0},LineParallelRelation [iLine1=AB, iLine2=CD],CircleCenterRelation{point=A, conic=Circle[⊙A]{center=A, analytic=(x-x_A)^2+(y-y_A)^2=r_A^2}},LineCrossRelation [crossPoint=Optional.of(E), iLine1=AB, iLine2=AB],LineCrossRelation [crossPoint=Optional.of(F), iLine1=AB, iLine2=AC],LineCrossRelation [crossPoint=Optional.of(M), iLine1=AP, iLine2=CD],EqualityRelation{∠FCM=(19/30*Pi)},Calculation:AngleRelation{angle=∠EAP},LinePerpRelation{line1=CN, line2=AM, crossPoint=N},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]∠EAP)},ProveConclusionRelation:[Proof: TriangleCongRelation{triangleA=△ACN, triangleB=△MCN}]

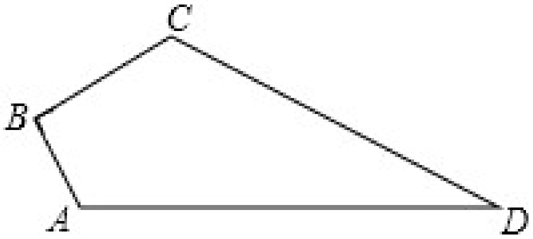
81, topic: as shown, is $ ⊙O $ $ △ABC $ circumcircle, the diameter of the AC is, for over $ OD⊥AB $ point O at points D, deposit $ ⊙O $ DO extend to a point P, through point for $ PE⊥AC $ P at point E, as a cross-ray DE extension line BC at point F is connected PF.?#%#(1) If $ ∠POC =60 ° $, $ AC =12 $, seeking bad ? PC arc length; (results reservations $ π $) #% # (2) Proof: $ OD =OE $; #% # (3) Prove:? PF is $ ⊙O $ tangent.



graph:
{"stem":{"pictures":[{"picturename":"1000026765_Q_1.jpg","coordinates":{"A":"2.00,8.00","B":"11.00,2.80","C":"14.00,8.00","D":"6.50,5.40","E":"11.00,8.00","F":"15.50,10.60","O":"8.00,8.00","P":"11.00,13.20"},"collineations":{"0":"P###F","1":"P###E","2":"P###O###D","3":"F###C###B","4":"D###E###F","5":"A###D###B","6":"A###O###E###C"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"C###A###B###P"}]}],"appliedproblems":{}},"substems":[]}

NLP: InscribedShapeOfCircleRelation{closedShape=△ABC, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}},DiameterRelation{diameter=AC, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, length=null},LinePerpRelation{line1=OD, line2=AB, crossPoint=D},LineCrossCircleRelation{line=DO, circle=⊙O, crossPoints=[P], crossPointNum=1},LinePerpRelation{line1=PE, line2=AC, crossPoint=E},SegmentRelation:PF,EqualityRelation{∠EOP=(1/3*Pi)},EqualityRelation{AC=12},Calculation:(ExpressRelation:[key:]⌒CP),SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]⌒CP)},ProveConclusionRelation:[Proof: EqualityRelation{DO=EO}],ProveConclusionRelation:[Proof: LineContactCircleRelation{line=PF, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, contactPoint=Optional.of(P), outpoint=Optional.of(F)}]

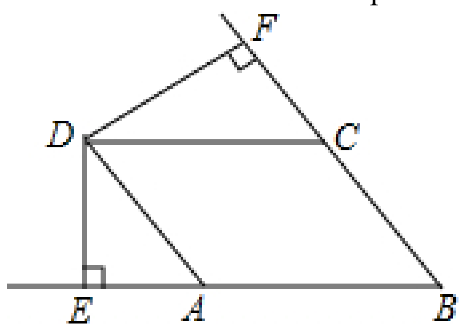
82, topic: As shown, the quadrilateral ABCD, $ ∠B =90 ° $, $ AB =3 $, $ BC =4 $ $ CD =12 $, $ AD =13 $, find the area of the quadrilateral ABCD.



graph:
{"stem":{"pictures":[{"picturename":"1000007024_Q_1.jpg","coordinates":{"A":"0.00,0.00","B":"-1.53,2.58","C":"1.92,4.62","D":"13.00,0.00"},"collineations":{"0":"A###C","1":"D###C","2":"C###D","3":"A###B","4":"B###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: known conditions QuadrilateralRelation {quadrilateral =ABCD}, EqualityRelation {S_ABCD =v_0}, known conditions QuadrilateralRelation {quadrilateral =ABCD}, EqualityRelation {∠ABC =(1/2 * Pi)}, EqualityRelation {AB =3}, EqualityRelation {BC =4}, EqualityRelation {CD =12}, EqualityRelation {AD =13}, evaluation (size) :(ExpressRelation: [key:] v_0), SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] S_ABCD)}

83, topic: FIG., A diamond quadrangle ABCD, DE⊥BA extension line BA in the cross point E, DF⊥BC BC extension lines cross at point F. Proof: DE =DF #% # <img>



graph:
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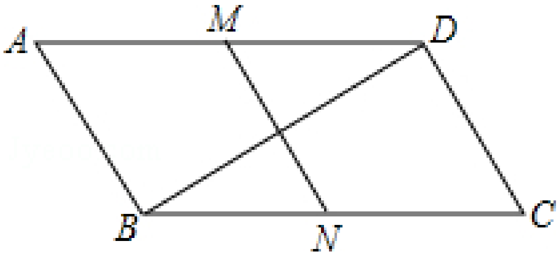
NLP: RhombusRelation{rhombus=Rhombus:ABCD},LinePerpRelation{line1=DE, line2=BA, crossPoint=E},LineCrossRelation [crossPoint=Optional.of(E), iLine1=DE, iLine2=BA],LinePerpRelation{line1=DF, line2=BC, crossPoint=F},LineCrossRelation [crossPoint=Optional.of(F), iLine1=DF, iLine2=BC],ProveConclusionRelation:[Proof: EqualityRelation{DE=DF}]

84, topic: as shown in the parallelogram ABCD, $ \ angle C =60 ^ \ circ $, M, N are the AD, BC is the midpoint, $ BC =2CD $ (1) Proof: a quadrilateral MNCD parallelogram;% # # (2) Proof: $ BD =\ sqrt 3 MN $.



graph: {"stem":{"pictures":[{"picturename":"1000010825_Q_1.jpg","coordinates":{"A":"-1.50,4.33","B":"1.00,0.00","C":"11.00,0.00","D":"8.50,4.33","M":"3.50,4.33","N":"6.00,0.00"},"collineations":{"0":"A###B","1":"D###B","2":"N###M","3":"B###N###C","4":"D###M###A","5":"C###D"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[{"substemid":"1","questionrelies":"","pictures":[],"appliedproblems":{}},{"substemid":"2","questionrelies":"1","pictures":[],"appliedproblems":{}}]}

NLP: ParallelogramRelation{parallelogram=Parallelogram:ABCD},EqualityRelation{∠DCN=(1/3*Pi)},MiddlePointOfSegmentRelation{middlePoint=M,segment=AD},MiddlePointOfSegmentRelation{middlePoint=N,segment=BC},EqualityRelation{BC=2*CD},ProveConclusionRelation:[Proof: ParallelogramRelation{parallelogram=Parallelogram:CDMN}],ProveConclusionRelation:[Proof: EqualityRelation{BD=(3^(1/2))*MN}]

85, topic: 1, in the △ABC, ∠ACB right angle, ∠B =60 °, AD, CE are ∠BAC, ∠BCA bisector, AD, CE intersect at point F, and FG⊥AB in G, FH⊥BC (1) to verify H #% #:. ∠BEC =∠ADC #% # (2) you Analyzing the relationship between the number of FE and FD, and demonstrate #% # (3). 2, in △ABC, if not a right angle ∠ACB, ∠B =60 °, AD, CE are ∠BAC, ∠BCA bisector, AD, CE at point F. Will you (2) whether the conclusions remain valid if established, please prove;? if established, please explain the reason #% # <img>.

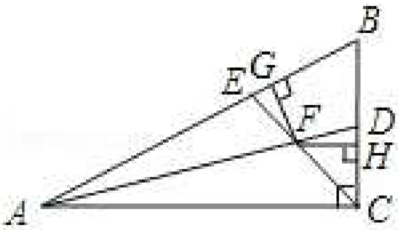


图1

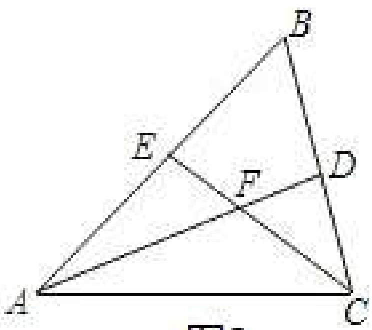


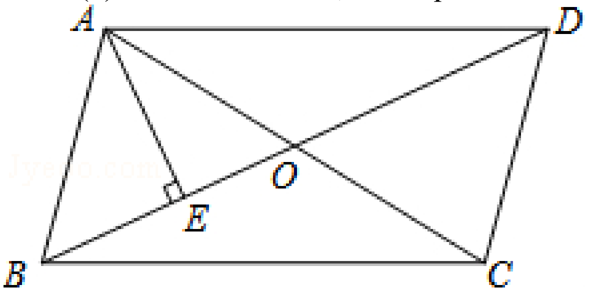
图2

graph: {"stem":{"pictures":[],"appliedproblems":{}},"substems":[{"substemid":"1","questionrelies":"","pictures":[{"picturename":"A89EDE9CBAA748B097AEA67B5E0EE6CF_1.jpg","coordinates":{"A":"-14.00,3.00","B":"-8.00,6.46","C":"-8.00,3.00","D":"-8.00,4.61","E":"-10.20,5.20","F":"-9.27,4.27","G":"-9.90,5.37","H":

"-8.00,4.27"},"collineations":{"0":"B###A###E###G","1":"A###F###D","2":"C###A","3":"B###D###H###C","4":"C###E###F","5":"F###G","6":"F###H"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},{"substemid":"2","questionrelies":"1","pictures":[{"picturename":"A89EDE9CBAA748B097AEA67B5E0EE6CF_1.jpg","coordinates":{"A":"-14.00,3.00","B":"-8.00,6.46","C":"-8.00,3.00","D":"-8.00,4.61","E":"-10.20,5.20","F":"-9.27,4.27","G":"-9.90,5.37","H":"-8.00,4.27"},"collineations":{"0":"B###A###E###G","1":"A###F###D","2":"C###A","3":"B###D###H###C","4":"C###E###F","5":"F###G","6":"F###H"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},{"substemid":"3","questionrelies":"","pictures":[{"picturename":"A89EDE9CBAA748B097AEA67B5E0EE6CF_2.jpg","coordinates":{"A":"-15.00,2.00","B":"-11.00,5.00","C":"-10.64,2.00","D":"-10.81,3.40","E":"-12.64,3.77","F":"-11.83,3.06"},"collineations":{"0":"B###A###E","1":"A###F###D","2":"C###A","3":"B###D###C","4":"C###E###F"},"variable-equals":{},"circles":[]}],"appliedproblems":{}}]}

NLP: TriangleRelation:△ABC,RightAngleRelation:∠ACH/RIGHT_ANGLE,EqualityRelation{∠DBG=(1/3*Pi)},AngleBisectorRelation{line=AD,angle=∠CAE, angle1=∠CAD, angle2=∠DAE},AngleBisectorRelation{line=CE,angle=∠ACH, angle1=∠ACE, angle2=∠ECH},LineCrossRelation[crossPoint=Optional.of(F), iLine1=AD, iLine2=CE],LinePerpRelation{line1=FG, line2=AB, crossPoint=G},LinePerpRelation{line1=FH, line2=BC, crossPoint=H},Calculation:(ExpressRelation:[key:](EF/DF)),(ExpressRelation:[key:]2),TriangleRelation:△ABC,NegativeRelation{relation=RightAngleRelation:∠ACH/RIGHT_ANGLE},EqualityRelation{∠DBG=(1/3*Pi)},AngleBisectorRelation{line=AD,angle=∠CAE, angle1=∠CAD, angle2=∠DAE},AngleBisectorRelation{line=CE,angle=∠ACH, angle1=∠ACE, angle2=∠ECH},LineCrossRelation[crossPoint=Optional.of(F), iLine1=AD, iLine2=CE],ProveConclusionRelation:[Proof: EqualityRelation{∠FEG=∠FDH}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:](EF/DF))}

86, topic: FIG, □ABCD in, AC and BD intersect at point O, ∠ABD =2∠DBC, AE⊥BD at point E #% # (1) if ∠ADB =25 °, the required ∠BAE. degrees;% # # (2) Proof: AB =2OE #% # <img>.



graph:
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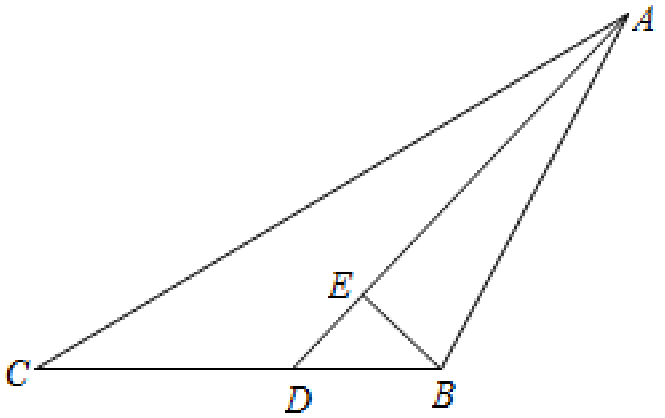
NLP: ParallelogramRelation {parallelogram =Parallelogram: ABCD}, LineCrossRelation [crossPoint =Optional.of (O), iLine1 =AC, iLine2 =BD], EqualityRelation {∠ABE 2 * ∠CBE =}, LinePerpRelation {line1 =AE, line2 =BD, crossPoint =E}, EqualityRelation {∠ADO =(5/36 * Pi)}, find the size of the angle: AngleRelation {angle =∠BAE}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] ∠BAE)}, ProveConclusionRelation: [Proof: EqualityRelation {AB =2 * EO}]

87, topic: As shown in $ \ vartriangle ABC $ in, $ \ angle ABE \ text {=} 2 \ angle C $, AD is $ \ angle BAC $ bisector, BE⊥AD, pedal for E. #% # (1) if $ \ angle C =30 ^ \ circ $, confirmation: AB =2BE; #% # (2) when the $ \ angle C \ ne 30 ^ \ circ $, Proof: $ BE =\ frac {1} {2} (AC-AB) $. #% # <img>



graph:
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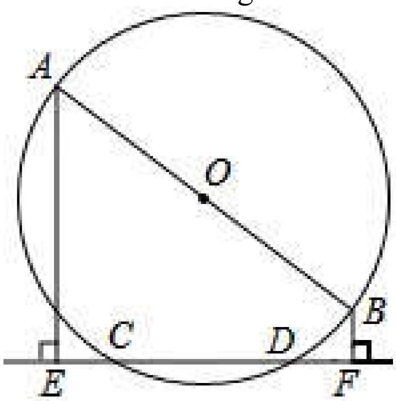
NLP: TriangleRelation:△ABC,EqualityRelation{∠ABE=2*∠ACD},AngleBisectorRelation{line=AD,angle=∠BAC, angle1=∠BAD, angle2=∠CAD},LinePerpRelation{line1=BE, line2=AD, crossPoint=E},EqualityRelation{∠ACD=(1/6*Pi)},ProveConclusionRelation:[Proof: EqualityRelation{AB=2*BE}],ProveConclusionRelation:[Proof: EqualityRelation{BE=(1/2)*(AC-AB)}]

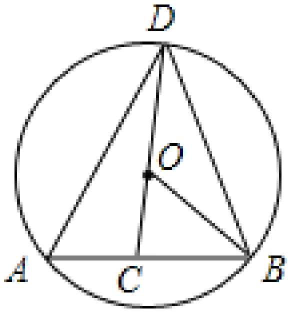
88, topic: FIG, AB is known $ \ odot O $ diameter, CD chord, AE⊥CD, pedal is E, BF⊥CD, pedal to F. (1) Proof: EC =DF; ? (2) If you let AB around point O of the rotation, points A, B is not the point C, D coincide, (1) the conclusions set up right, if established, please prove; if not satisfied, please explain the reason #% # <. img>



graph:
{"stem":{"pictures":[{"picturename":"1000035146_Q_1.jpg","coordinates":{"A":"-3.08,2.55","B":"3.08,-2.55","C":"-2.14,-3.38","D":"2.14,-3.38","E":"-3.08,-3.38","F":"3.08,-3.38","O":"0.00,0.00","H":"-3.08,-2.55"},"collineations":{"0":"B###O###A","1":"E###C###D###F","2":"A###E###H","3":"B###F"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"A###B###C###D###H"}]}],"appliedproblems":{}},"substems":[]}

NLP: DiameterRelation{diameter=AB, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, length=null},ChordOfCircleRelation{chord=CD, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, chordLength=null,straightLine=null},LinePerpRelation{line1=AE, line2=CD, crossPoint=E},LinePerpRelation{line1=BF, line2=CD, crossPoint=F},ConstantPointOnLineRelation [line=StraightLine[AB] analytic :y=k_AB*x+b_AB slope:null b:null isLinearFunction:false, point=O],NegativeRelation{relation=PointCoincidenceRelation{point1=A, point2=C}},NegativeRelation{relation=PointCoincidenceRelation{point1=A, point2=D}},NegativeRelation{relation=PointCoincidenceRelation{point1=B, point2=C}},NegativeRelation{relation=PointCoincidenceRelation{point1=B, point2=D}},ProveConclusionRelation:[Proof: EqualityRelation{CE=DF}]

89, topic: FIG, chord ⊙O is known AB, OB =4, ∠OBC =30 °, point C is the chord AB at any point (and not points A, B overlap), connecting cross-CO and CO extension ⊙O at points D, connected to AD, DB #% # (1) when ∠ADC =18 °, the required degree ∠DOB;. #% # (2) if $ AC =2 \ sqrt {3} $, confirmation : △ACD∽ △OCB #% # <img>.



graph:
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NLP: ChordOfCircleRelation{chord=AB, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, chordLength=null,straightLine=null},PointRelation:A,PointRelation:B,ChordOfCircleRelation{chord=AB, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, chordLength=null,straightLine=null},EqualityRelation{BO=4},EqualityRelation{∠CBO=(1/6*Pi)},PointOnLineRelation{point=C, line=AB, isConstant=false, extension=false},LineCrossCircleRelation{line=CO, circle=⊙O, crossPoints=[D], crossPointNum=1},SegmentRelation:AD,SegmentRelation:DB,EqualityRelation{∠ADO=(1/10*Pi)},Calculation:AngleRelation{angle=∠BOD},EqualityRelation{AC=2*(3^(1/2))},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]∠BOD)},ProveConclusionRelation:[Proof: TriangleSimilarRelation{triangleA=△ACD, triangleB=△OCB}]

90, topic: known $ \ odot O $ diameter AB =2cm, two chords over the AC node A $ =\ sqrt {2} cm $, $ AD =\ sqrt {3} cm $, and find ∠CAD sandwiched loop area thereof.

graph:
{"stem":{"pictures":[],"appliedproblems":{}},"substems":[{"substemid":"1","questionrelies":"","pictures":[{"picturename":"1000060820_Q_1.jpg","coordinates":{"A":"-1.00,0.00","B":"1.00,0.00","C":"0.00,1.00","

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NLP: PointOnCircleRelation{circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, points=[A]},DiameterRelation{diameter=AB, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, length=Express:[AB=2]},EqualityRelation{AC=(2^(1/2))},EqualityRelation{AD=(3^(1/2))}

91, topic: FIG point E is a point on a diagonal line BD rectangle ABCD, and BE =BC, AB =3, BC =4, the point P is a point on the straight line EC, and PQ⊥BC at point Q, FIG PR⊥BD at point R. #% # (1) 1, when the point P is the midpoint of a line segment EC, easy to prove that: $ PR + PQ =\ frac {12} {5} $ (without proof) # % # (2) shown in Figure 2, when the point P is a point (not the point E, point C coincide) any EC on the line, the other conditions remain unchanged, then (1) the conclusions are still valid? if established, Please give proof; if not established, please explain the reason #% # (3) shown in Figure 3, when the point P is a point when the line EC to extend any line, ceteris paribus, the PQ and PR between what they have. number of relationships? please write your guess. #% # <img>

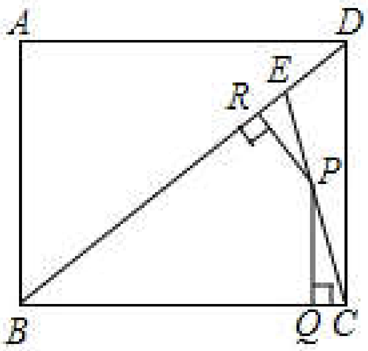


图1

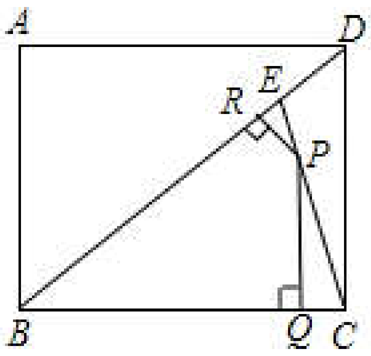
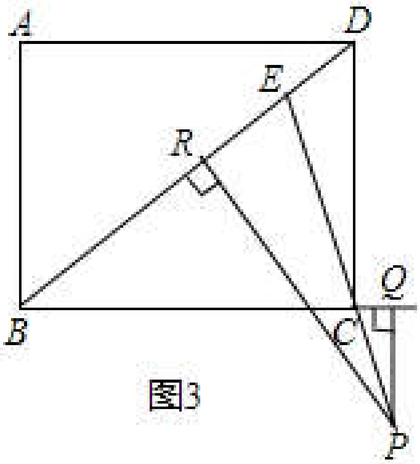


图2



graph:

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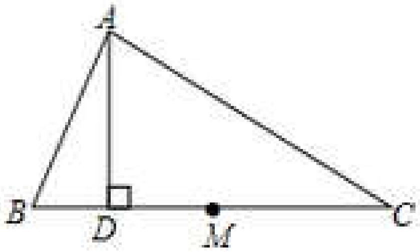
NLP: RectangleRelation{rectangle=Rectangle:ABCD},PointOnLineRelation{point=E, line=BD, isConstant=false, extension=false},EqualityRelation{BE=BC},EqualityRelation{AB=3},EqualityRelation{BC=4},PointOnLineRelation{point=P, line=EC, isConstant=false, extension=false},LinePerpRelation{line1=PQ, line2=BC, crossPoint=Q},LinePerpRelation{line1=PR, line2=BD, crossPoint=R},MiddlePointOfSegmentRelation{middlePoint=P,segment=EC},PointRelation:E,PointRelation:C,(ExpressRelation:[key:]2),(ExpressRelation:[key:]3),Calculation:(ExpressRelation:[key:](PR/PQ)),ProveConclusionRelation:[Proof: (ExpressRelation:[key:]1)],ProveConclusionRelation:[Proof: EqualityRelation{PR+PQ=(12/5)}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:](PR/PQ))}

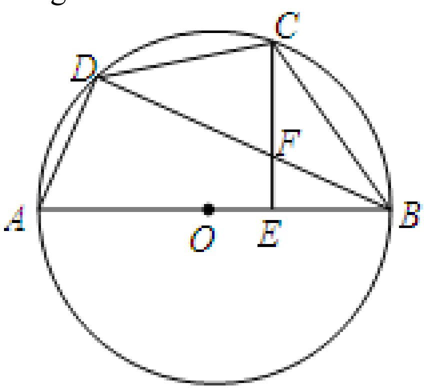
92, topic: As shown in the triangle ABC, $ \ angle B =2 \ angle C $, AD is the height of the triangle, point M is the midpoint of the side BC Proof: $ DM =\ frac {1} {2 } AB $. #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000040694_Q_1.jpg","coordinates":{"A":"-9.03,4.35","B":"-11.00,2.00","C":"-4.00,2.00","D":"-9.03,2.00","M":"-7.50,2.00"},"collineations":{"0":"A###D","1":"A###B","2":"A###C","3":"B###D###M###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleRelation:△ABC,EqualityRelation{∠ABD=2*∠ACM},MiddlePointOfSegmentRelation{middlePoint=M,segment=BC},LinePerpRelation{line1=AD, line2=BD, crossPoint=D},ProveConclusionRelation:[Proof: EqualityRelation{DM=(1/2)*AB}]

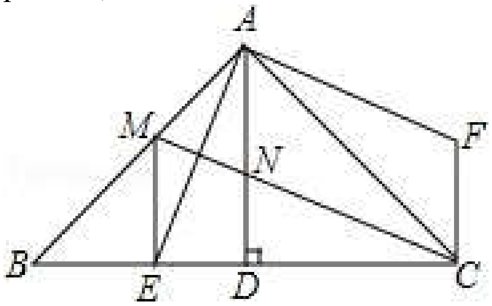
93, topic: FIG, AB is ⊙O diameter, C is the midpoint of the arc BD, CE⊥AB, pedal point E, BD CE cross at point F #% # (1) Prove:. CF =BF ;. #% # (2) when AD =2, 3 is ⊙O radius, long seeking BC #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000080956_Q_1.jpg","coordinates":{"A":"-8.11,-0.10","B":"-2.11,-0.05","C":"-4.13,2.76","D":"-7.46,1.79","E":"-4.11,-0.07","F":"-4.11,0.64","O":"-5.11,-0.08"},"collineations":{"0":"A###O###B","1":"C###F###E","2":"A###D","3":"B###D","4":"C###D","5":"C###B"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"A###D###C###B"}]}],"appliedproblems":{}},"substems":[]}

NLP: DiameterRelation{diameter=AB, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, length=null},MiddlePointOfArcRelation:C/type:MAJOR_ARC⌒BD,LinePerpRelation{line1=CE, line2=AB, crossPoint=E},LineCrossRelation [crossPoint=Optional.of(F), iLine1=BD, iLine2=CE],EqualityRelation{BC=v_0},EqualityRelation{AD=2},RadiusRelation{radius=null, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, length=Express:[3]},Calculation:(ExpressRelation:[key:]v_0),ProveConclusionRelation:[Proof: EqualityRelation{CF=BF}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]BC)}

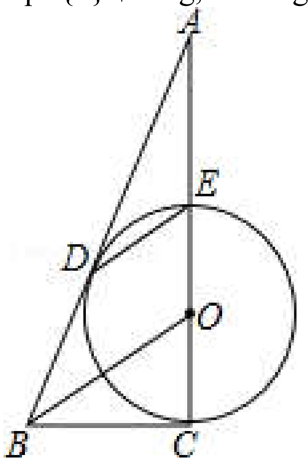
94, topic: FIG, $ △ABC $ in, $ ∠BAC =90 ° $, $ AB =AC $, $ AD⊥BC $, pedal is D, AE bisects $ ∠BAD $, BC at point E there is an outer $ △ABC $ point F, so $ FA⊥AE $, $ FC⊥BC $ #% # (1) Prove:.? $ BE =CF $; #% # (2) takes on the AB? point M, so $ BM =2DE $, connector MC, AD cross at point N, the connection confirmation ME:. ① $ ME⊥BC $; ② $ DE =DN $.



graph:
{"stem":{"pictures":[{"picturename":"1000026620_Q_1.jpg","coordinates":{"A":"10.00,5.00","B":"5.00,0.00","C":"15.00,0.00","D":"10.00,0.00","E":"7.93,0.00","F":"15.00,2.93","M":"7.86,2.86","N":"10.00,2.00"},"collineations":{"0":"A###M###B","1":"A###E","2":"A###N###D","3":"A###C","4":"A###F","5":"M###E","6":"M###N###C","7":"F###C","8":"B###E###D###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleRelation:△ABC,EqualityRelation{∠CAM=(1/2*Pi)},EqualityRelation{AB=AC},LinePerpRelation{line1=AD, line2=BC, crossPoint=D},AngleBisectorRelation{line=AE,angle=∠MAN, angle1=∠EAM, angle2=∠EAN},LineCrossRelation [crossPoint=Optional.of(E), iLine1=AE, iLine2=BC],PositionOfPoint2RegionRelation{point=F, region=EnclosedRegionRelation{name=ABC, closedShape=△ABC}, position=outer},LinePerpRelation{line1=FA, line2=AE, crossPoint=A},LinePerpRelation{line1=FC, line2=BC, crossPoint=C},PointOnLineRelation{point=M, line=AB, isConstant=false, extension=false},EqualityRelation{BM=2*DE},SegmentRelation:MC,LineCrossRelation [crossPoint=Optional.of(N), iLine1=MC, iLine2=AD],SegmentRelation:ME,ProveConclusionRelation:[Proof: EqualityRelation{BE=CF}]

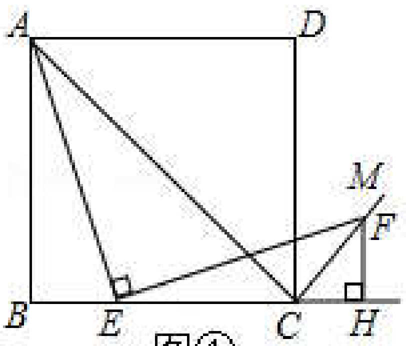
95, topic: FIG, CE is ⊙O diameter, cut ⊙O BD at point D, DE∥BO, CE BD extension lines cross at point A #% # (1) Proof: the straight line BC is ⊙O tangent;% # # (2) when AE =2, $ \ tan \ angle DEO =\ sqrt {2} $ long, seeking the AO #% # <img>.



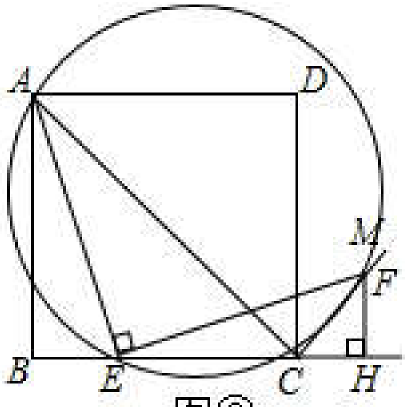
graph:
{"stem":{"pictures":[{"picturename":"1000040066_Q_1.jpg","coordinates":{"A":"0.00,6.00","B":"-2.83,-2.00","C":"0.00,-2.00","D":"-1.89,0.67","E":"0.00,2.00","O":"0.00,0.00"},"collineations":{"0":"A###E###O###C","1":"A###D###B","2":"C###B","3":"B###O","4":"D###E"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"E###D###C"}]}],"appliedproblems":{}},"substems":[]}

NLP: DiameterRelation{diameter=CE, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, length=null},LineContactCircleRelation{line=BD, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, contactPoint=Optional.of(D), outpoint=Optional.of(B)},LineParallelRelation [iLine1=DE, iLine2=BO],LineCrossRelation [crossPoint=Optional.of(A), iLine1=CE, iLine2=BD],EqualityRelation{AO=v_0},EqualityRelation{AE=2},EqualityRelation{tan(∠DEO)=(2^(1/2))},Calculation:(ExpressRelation:[key:]v_0),ProveConclusionRelation:[Proof: LineContactCircleRelation{line=BC, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, contactPoint=Optional.of(C), outpoint=Optional.of(B)}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]AO)}

96, topic: FIG ①, quadrangle ABCD is a square, that is point E, point F on the radiation CM, $ ∠AEF =90 ° $, $ AE =EF $, as a ray through the point F on the side BC BC weeping line pedal point H, is connected AC.?#%#(1) test determines the relationship between the number of FH and BE, and the reasons;% # # (2) Prove:? $ ∠ACF =90 ° $; #? % # (3) connected to the AF, through a, E, F for three circle, as shown in FIG ②, if $ EC =4 $, $ ∠CEF =15 ° $, seeking $ \ widehat {AE} $ long.



图①



图②

graph:
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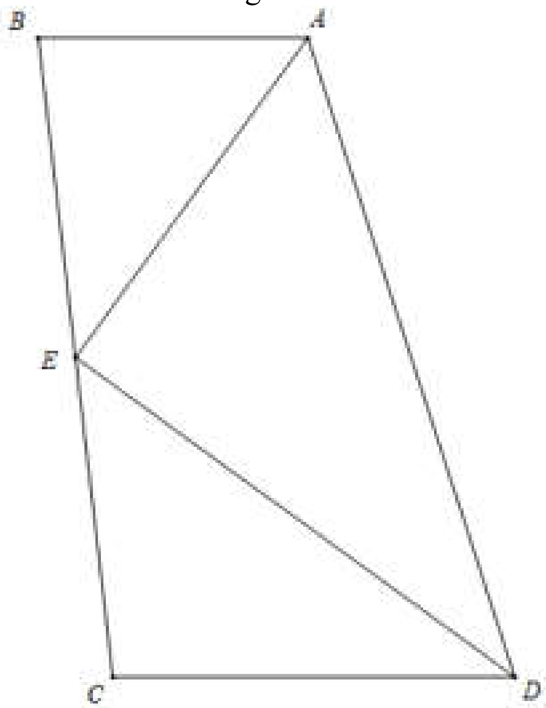
NLP: SquareRelation{square=Square:ABCD},PointOnLineRelation{point=E, line=BC, isConstant=false, extension=false},PointOnLineRelation{point=F, line=CM, isConstant=false, extension=false},EqualityRelation{∠AEF=(1/2*Pi)},EqualityRelation{AE=EF},LinePerpRelation{line1=Ray:BC, line2=FH, crossPoint=H},SegmentRelation:AC,Calculation:(ExpressRelation:[key:](BE/FH)),MultiPointCollinearRelation:[A, F, A],MultiPointCollinearRelation:[A, F, E],EqualityRelation{CE=4},EqualityRelation{∠BEF=(1/12*Pi)},Calculation:(ExpressRelation:[key:]⌒AE),SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:](BE/FH))},ProveConclusionRelation:[Proof: EqualityRelation{∠

ACF=(1/2*Pi)}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]⌒AE)}

97, topic: FIG known AB // CD, AE, DE ∠BAD respectively and the bisector ∠ADC Proof: AB + CD =AD #% # <img>



graph:
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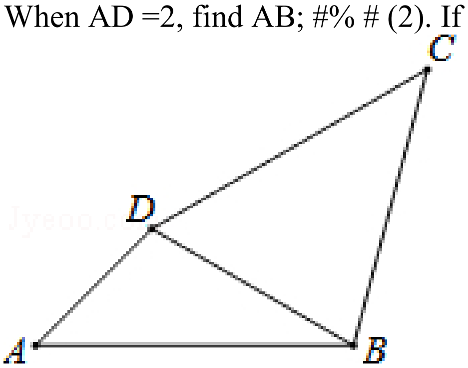
NLP: LineParallelRelation [iLine1=AB, iLine2=CD],AngleBisectorRelation{line=AE,angle=∠BAD, angle1=∠BAE, angle2=∠DAE},AngleBisectorRelation{line=DE,angle=∠ADC, angle1=∠ADE, angle2=∠CDE},ProveConclusionRelation:[Proof: EqualityRelation{AB+CD=AD}]

98, topic: As shown, the quadrilateral ABCD, ∠A =∠C =45 °, ∠ADB =∠ABC =105 ° #% # (1) When AD =2, find AB; #% # (2). If $ AB + CD =2 {\ sqrt {3}} + 2 $, seeking AB. #% # <img>



graph:
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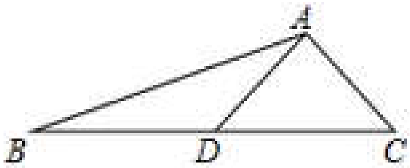
#%#"appliedproblems":{}}#%#"substems":[]}

NLP: known conditions QuadrilateralRelation {quadrilateral =ABCD}, MultiEqualityRelation [multiExpressCompare =∠A =∠C =(1/4 * Pi), originExpressRelationList =[], keyWord =null, result =null], MultiEqualityRelation [multiExpressCompare =∠ADB =∠ABC =(7/12 * Pi), originExpressRelationList =[], keyWord =null, result =null], EqualityRelation {AD =2}, evaluation (size) :(ExpressRelation: [key:] AB), EqualityRelation {AB + CD =2 * ((3 ^ (1/2))) + 2}, evaluation (size) :(ExpressRelation: [key:] AB), SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation : [key:] AB)}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] AB)}

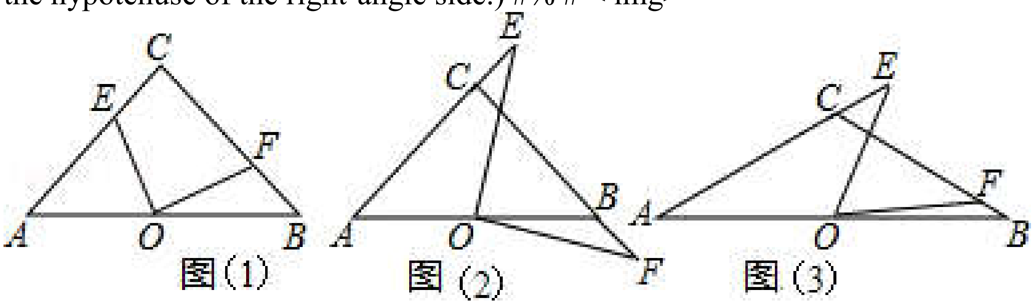
99, topic: FIG, AD is a center line of △ABC, $ \ tan B =\ frac {1} {3} $, $ \ cos C =\ frac {\ sqrt {2}} {2} $, $ AC . =\ sqrt {2} $ requirements:. #% # (1) BC long;% # # (2) the value of sin∠ADC #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000052250_Q_1.jpg","coordinates":{"A":"-5.00,3.00","B":"-8.00,2.00","C":"-4.00,2.00","D":"-6.00,2.00"},"collineations":{"0":"A###C","1":"A###B","2":"A###D","3":"B###D###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleRelation: △ABC, EqualityRelation {tan (∠ABD) =(1/3)}, EqualityRelation {cos (∠ACD) =(((2 ^ (1/2))) / 2)}, EqualityRelation {AC =(2 ^ (1/2))}, MidianLineOfTriangleRelation {midianLine =AD, triangle =△ABC, top =A, bottom =BC}, EqualityRelation {BC =v_0}, evaluation (size) :(ExpressRelation: [key :] v_0), evaluation (size) :(ExpressRelation: [key:] sin (∠ADC)), SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] BC)}, SolutionConclusionRelation {relation =evaluation (size) :(ExpressRelation: [key:] sin (∠ADC))}

100, topic: is known: In the △ABC, CA =CB =10cm, O is the midpoint of AB, E, F, respectively, on the straight line AC, BC, and ∠EOF =2∠A #% # (1). If ∠A =45 °, #% # ① in FIG. (1), -OC coupling, when E, F, respectively, the line segment AC, when the BC on, Proof: △COE≌ △BOF; #% # ② in FIG. (2) when E, F, respectively, when the extension line of AC and CB extension line evaluation of CF-CE;% # # (2) as shown in (3), if ∠A =30 °, and E, F, respectively, extension of the line segment AC and the line BC, CE and CF test described how to satisfy the relation% # #. (Note: in the right triangle, 30 ° angle equal to half of the hypotenuse of the right-angle side.) #% # < img>



graph:
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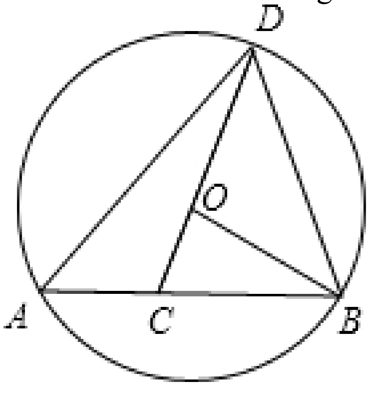
ems":{}},{"substemid":"2","questionrelies":"","pictures":[{"picturename":"1000037839_Q_2.jpg","coordinates":{"A":"-14.95,4.00","B":"-8.97,4.00","C":"-11.96,6.98","O":"-11.99,4.00","E":"-10.77,8.20","F":"-7.83,2.83"},"collineations":{"0":"A###C###E","1":"C###B###F","2":"E###O","3":"F###O","4":"A###O###B"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},{"substemid":"2","questionrelies":"","pictures":[{"picturename":"1000037839_Q_3.jpg","coordinates":{"A":"-14.00,-1.00","B":"-5.97,-1.04","C":"-9.97,1.30","O":"-10.03,-1.02","E":"-8.56,2.15","F":"-6.55,-0.71"},"collineations":{"0":"A###C###E","1":"C###F###B","2":"E###O","3":"F###O","4":"A###O###B"},"variable-equals":{},"circles":[]}],"appliedproblems":{}}]}

NLP: TriangleRelation:△ABC,MultiEqualityRelation [multiExpressCompare=AC=BC=10, originExpressRelationList=[], keyWord=null, result=null],MiddlePointOfSegmentRelation{middlePoint=O,segment=AB},PointOnLineRelation{point=E, line=AC, isConstant=false, extension=false},PointOnLineRelation{point=F, line=BC, isConstant=false, extension=false},EqualityRelation{∠EOF=2*∠EAO},EqualityRelation{∠EAO=(1/4*Pi)},SegmentRelation:OC,PointOnLineRelation{point=E, line=AC, isConstant=false, extension=false},PointOnLineRelation{point=F, line=BC, isConstant=false, extension=false},PointOnLineRelation{point=E, line=AC, isConstant=false, extension=false},PointOnLineRelation{point=F, line=CB, isConstant=false, extension=false},Calculation:(ExpressRelation:[key:]CF-CE),EqualityRelation{∠EAO=(1/6*Pi)},PointOnLineRelation{point=E, line=AC, isConstant=false, extension=false},PointOnLineRelation{point=F, line=BC, isConstant=false, extension=false},Calculation:(ExpressRelation:[key:](CF/CE)),ProveConclusionRelation:[Proof: TriangleCongRelation{triangleA=△COE, triangleB=△BOF}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]CF-CE)},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:](CF/CE))}

101, topic: FIG, AB is known $ \ odot O $ string, OB =4, ∠OBC =30 °, point C is the chord AB at any point (not the point A, B overlap), and connected to CO extended post $ \ odot O $ at points D, connected to AD, DB #% # (1) when ∠ADC =18 °, the required degree ∠DOB;. #% # (2) if $ AC =2 \ sqrt { } $ 3, confirmation $ \ vartriangle ACD \ sim \ vartriangle OCB $. #% # <img>

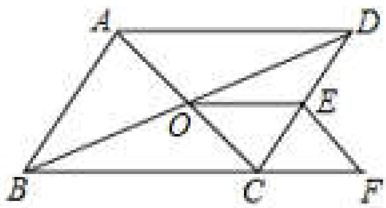


graph:

{"stem":{"pictures":[{"picturename":"1000060729_Q_1.jpg","coordinates":{"A":"0.84,-3.91","B":"2.97,2.68","C":"1.63,-1.47","D":"-2.97,2.68","O":"0.00,0.00"},"collineations":{"0":"B###C###A","1":"D###O###C","2":"B###O","3":"D###B","4":"A###D"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"A###B###D"}]}],"appliedproblems":{}},"substems":[{"substemid":"2","questionrelies":"","pictures":[{"picturename":"1000060729_Q_1.jpg","coordinates":{"A":"12.00,-3.46","B":"12.00,3.46","C":"12.00,0.00","D":"6.00,0.00","O":"10.00,0.00"},"collineations":{"0":"B###C###A","1":"D###O###C","2":"B###O","3":"D###B","4":"A###D"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"A###B###D"}]}],"appliedproblems":{}}]}

NLP: ChordOfCircleRelation{chord=AB, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, chordLength=null,straightLine=null},PointRelation:A,PointRelation:B,ChordOfCircleRelation{chord=AB, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, chordLength=null,straightLine=null},EqualityRelation{BO=4},EqualityRelation{∠CBO=(1/6*Pi)},PointOnLineRelation{point=C, line=AB, isConstant=false, extension=false},LineCrossCircleRelation{line=CO, circle=⊙O, crossPoints=[D], crossPointNum=1},SegmentRelation:AD,SegmentRelation:DB,EqualityRelation{∠ADO=(1/10*Pi)},Calculation:AngleRelation{angle=∠BOD},EqualityRelation{AC=2*(3^(1/2))},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]∠BOD)},ProveConclusionRelation:[Proof: TriangleSimilarRelation{triangleA=△ACD, triangleB=△OCB}]

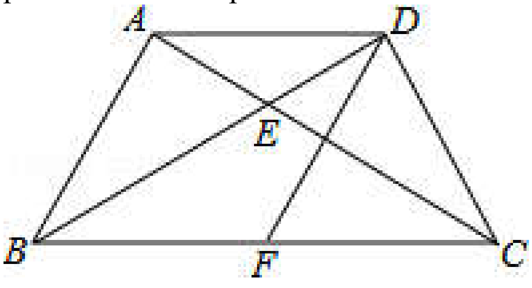
102, topic: FIG, parallelogram ABCD $ $, the point O is the diagonal AC, BD an intersection point E is the midpoint of the side CD, point F extension line BC, and $ CF =\ frac {1} {2} BC $ confirmation: $ OCFE $ quadrilateral is a parallelogram.



graph:
{"stem":{"pictures":[{"picturename":"1000024672.jpg","coordinates":{"A":"2.00,5.00","B":"0.00,0.00","C":"6.00,0.00","D":"8.00,5.00","E":"7.00,2.50","F":"9.00,0.00","O":"4.00,2.50"},"collineations":{"0":"A###B","1":"C###O###A","2":"D###O###B","3":"C###F###B","4":"D###C###E","5":"O###E","6":"E###F","7":"A###D"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: ParallelogramRelation{parallelogram=Parallelogram:ABCD},LineCrossRelation [crossPoint=Optional.of(O), iLine1=AC, iLine2=BD],MiddlePointOfSegmentRelation{middlePoint=E,segment=CD},PointOnLineRelation{point=F, line=BC, isConstant=false, extension=true},EqualityRelation{CF=(1/2)*BC},ProveConclusionRelation:[Proof: ParallelogramRelation{parallelogram=Parallelogram:CFEO}]

103, topic: As shown, the quadrilateral ABCD, AB =AD, AC and BD intersect at point E, ∠ADB =∠ACB #% # (1) Prove:. $ \ Frac {AB} {AE} =\ frac {AC} {AD} $; #% # (2) if AB⊥AC, AE: EC =1: 2, point F is the midpoint of BC Proof: ABFD quadrilateral is a rhombus #% # <img>.

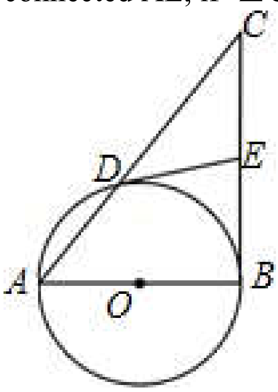


graph:
{"stem":{"pictures":[{"picturename":"D38B55624FC24103908600A2EE9DF528.jpg","coordinates":{"A":"-12.00,6.00","B":"-13.50,3.40","C":"-7.50,3.40","D":"-9.00,6.00","E":"-10.50,5.13","F":"-10.50,3.40"},"collineations":{"0":"B###A","1":"A###D","2":"A###E###C","3":"B###F###C","4":"B###E###D","5":"F###D

"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[{"substemid":"2","questionrelies":"1","pictures":[],"appliedproblems":{}}]}

NLP: Know:QuadrilateralRelation{quadrilateral=ABCD},EqualityRelation{AB=AD},LineCrossRelation[crossPoint=Optional.of(E), iLine1=AC, iLine2=BD],EqualityRelation{∠ADE=∠ECF},LinePerpRelation{line1=AB, line2=AC, crossPoint=A},EqualityRelation{(AE)/(CE)=(1)/(2)},MiddlePointOfSegmentRelation{middlePoint=F,segment=BC},ProveConclusionRelation:[Proof: EqualityRelation{((AB)/(AE))=((AC)/(AD))}],ProveConclusionRelation:[Proof: RhombusRelation{rhombus=Rhombus:ABFD}]

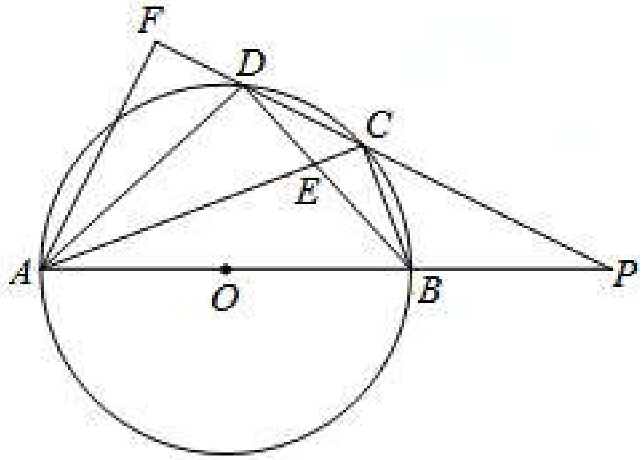
104, topic: As shown in the △ABC, BC is ⊙O AB is the diameter of the tangent, and the AC ⊙O intersect at point D, E midpoint BC connected DE #% # (1). Proof: DE is tangent ⊙O;% # # (2) is connected AE, if ∠C =45 °, find sin∠CAE value #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000039418_Q_1.jpg","coordinates":{"A":"4.00,2.00","B":"8.00,2.00","C":"8.00,6.00","D":"6.00,4.00","E":"8.00,4.00","O":"6.00,2.00"},"collineations":{"0":"C###E###B","1":"A###O###B","2":"A###D###C","3":"D###E"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"A###D###B"}]}],"appliedproblems":{}},"substems":[]}

NLP: DiameterRelation{diameter=AB, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, length=null},TriangleRelation:△ABC,LineContactCircleRelation{line=BC, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, contactPoint=Optional.of(B), outpoint=Optional.of(C)},LineCrossCircleRelation{line=AC, circle=⊙O, crossPoints=[D], crossPointNum=1},MiddlePointOfSegmentRelation{middlePoint=E,segment=BC},SegmentRelation:DE,SegmentRelation:AE,EqualityRelation{∠DCE=(1/4*Pi)},Calculation:(ExpressRelation:[key:]sin(∠CAE)),ProveConclusionRelation:[Proof: LineContactCircleRelation{line=DE, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, contactPoint=Optional.of(D), outpoint=Optional.of(E)}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]sin(∠CAE))}

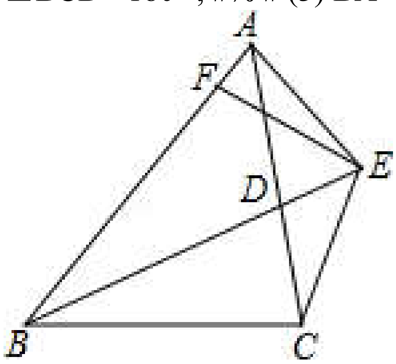
105, topic: As shown, the contact with the quadrilateral ABCD $ ⊙O $, AB is the diameter of $ ⊙O $, AC, and BD intersect at point E, and $ {DC} ^ 2 =CE \ cdot CA $ #.? % # (1) Prove:? $ BC =CD $; #% # (2) are extended AB, DC at point P, through the point a as $ AF⊥CD $ post extension line CD in point F, if $ PB =OB $, $ {{CD}} =2 \ sqrt 2 $. DF seeking long. <img>



graph:
{"stem":{"pictures":[{"picturename":"1000008211_Q_1.jpg","coordinates":{"A":"-4.00,0.00","B":"4.00,0.00","C":"2.99,2.65","D":"0.48,3.97","E":"1.99,2.27","F":"-1.40,4.96","O":"0.00,0.00","P":"8.00,0.00"},"collineations":{"0":"B###D###E","1":"A###C","2":"A###D","3":"A###F","4":"F###D###C###P","5":"B###C"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"A###B###C###D"}]}],"appliedproblems":{}},"substems":[]}

NLP: InscribedShapeOfCircleRelation{closedShape=ABCD, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}},DiameterRelation{diameter=AB, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, length=null},LineCrossRelation [crossPoint=Optional.of(E), iLine1=AC,
iLine2=BD],EqualityRelation{(CD)^2=CE*AC},EqualityRelation{DF=v_0},LineCrossRelation [crossPoint=Optional.of(P), iLine1=AB, iLine2=DC],LinePerpRelation{line1=AF, line2=CD, crossPoint=F},LineCrossRelation [crossPoint=Optional.of(F), iLine1=AF, iLine2=CD],PointOnLineRelation{point=A, line=AF, isConstant=false, extension=false},EqualityRelation{BP=BO},EqualityRelation{(CD)=2*(2^(1/2))},Calculation:(ExpressRelation:[key:]v_0),ProveConclusionRelation:[Proof: EqualityRelation{BC=CD}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]DF)}

106, topic: FIG, BD is the bisector of △ABC, and BD =BC, E is a point on an extension line BD, BE =BA, through E for EF⊥AB, F is the pedal confirmation: #% # (1) △ABD≌ △EBC; #% # (2) ∠BCE + ∠BCD =180 °; #% # (3) BA + BC =2BF #% # <img>.

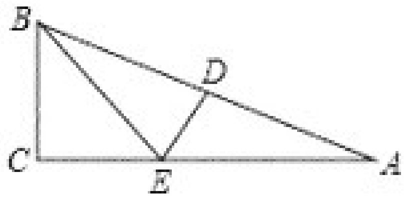


graph:
{"stem":{"pictures":[{"picturename":"D7F4F9174E4E4BF0A503FD15B81F0662.jpg","coordinates":{"A":"-10.20,8.07","B":"-14.00,3.00","C":"-9.00,3.00","D":"-9.53,5.24","E":"-8.33,5.83","F":"-10.60,7.54"},"collineations":{"0":"B###F###A","1":"A###D###C","2":"A###E","3":"C###B","4":"B###D###E","5":"C###E","6":"F###E"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[{"substemid":"2","qu

estionrelies":"1","pictures":[],"appliedproblems":{}},{"substemid":"3","questionrelies":"1","pictures":[],"appliedproblems":{}}]}

NLP: TriangleRelation:△ABC,EqualityRelation{BD=BC},PointOnLineRelation{point=E, line=BD, isConstant=false, extension=true},EqualityRelation{BE=AB},LinePerpRelation{line1=EF, line2=AB, crossPoint=F},PointOnLineRelation{point=E, line=EF, isConstant=false, extension=false},AngleBisectorRelation{line=BD,angle=∠CBF, angle1=∠DBF, angle2=∠CBD},ProveConclusionRelation:[Proof: TriangleCongRelation{triangleA=△ABD, triangleB=△EBC}],ProveConclusionRelation:[Proof: EqualityRelation{∠BCE+∠BCD=(Pi)}],ProveConclusionRelation:[Proof: EqualityRelation{AB+BC=2*BF}]

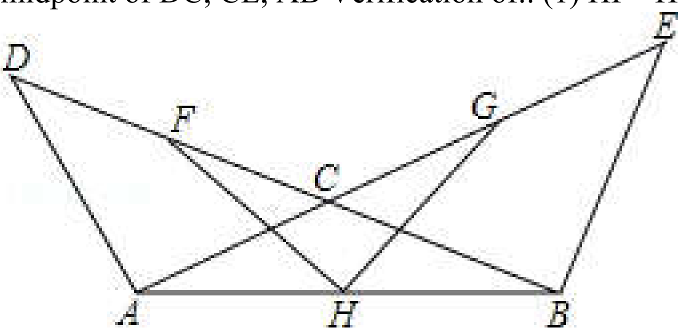
107, topic: FIG, $ Rt \ vartriangle ABC $ in, $ \ angle ACB =90 ^ \ circ $, $ AC =12 $, $ BC =5 $, D $ is the fixed point of the edge AB $, $ is a fixed point E $ $ $ edge of the AC, the minimum value is bE + ED $ $



graph:
{"stem":{"pictures":[{"picturename":"1000027620_Q_1.jpg","coordinates":{"A":"12.00,0.00","B":"0.00,5.00","C":"0.00,0.00","D":"3.55,3.52","E":"2.08,0.00"},"collineations":{"0":"B###D###A","1":"A###E###C","2":"B###C","3":"B###E","4":"D###E"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: ExtremumRelation [key=Express:[BE+DE], value=Express:[v_0], extremumType=MIN],RightTriangleRelation:RightTriangle:△ABC[Optional.of(C)],EqualityRelation{∠BCE=(1/2*Pi)},EqualityRelation{AC=12},EqualityRelation{BC=5},PointOnLineRelation{point=D, line=AB, isConstant=false, extension=false},PointOnLineRelation{point=E, line=AC, isConstant=false, extension=false},(ExpressRelation:[key:]v_0)

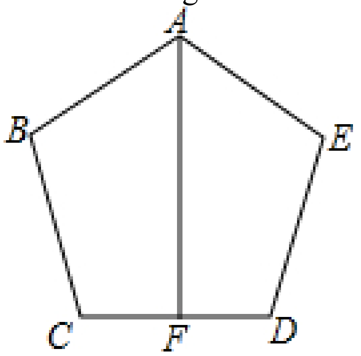
108, topic: FIG known AE, BD intersect at point C, AC =AD, BC =BE, F, G, H, respectively, is the midpoint of DC, CE, AB Verification of:. (1) HF =HG; (2) ∠FHG =∠DAC. #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000041565_Q_1.jpg","coordinates":{"A":"-9.97,2.04","B":"-5.98,2.04","C":"-7.98,2.86","D":"-10.80,4.03","E":"-5.16,4.03","F":"-9.39,3.45","G":"-6.57,3.45","H":"-7.98,2.04"},"collineations":{"0":"A###H###B","1":"A###D","2":"B###E","3":"D###F###C###B","4":"A###C###G###E","5":"F###H","6":"G###H"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: LineCrossRelation [crossPoint=Optional.of(C), iLine1=AE, iLine2=BD],EqualityRelation{AC=AD},EqualityRelation{BC=BE},MiddlePointOfSegmentRelation{middl ePoint=F,segment=DC},MiddlePointOfSegmentRelation{middlePoint=G,segment=CE},MiddlePointOfSegmentRelation{middlePoint=H,segment=AB},EqualityRelation{(2)*∠FHG=∠CAD},ProveConclusionRelation:[Proof: EqualityRelation{FH=GH}]

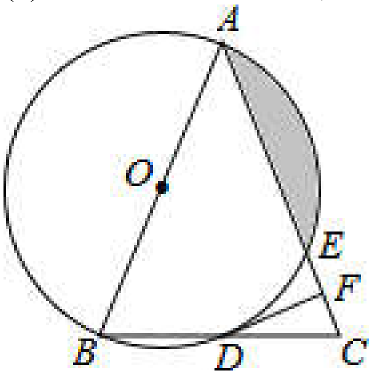
109, topic: FIG, AB =AE, ∠ABC =∠AED, BC =ED, point F is the midpoint of the CD Proof:. AF⊥CD #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"DC0D0ECBF8A74741829B940520CA0B39.jpg","coordinates":{"A":"-11.00,8.00","B":"-14.00,6.00","C":"-13.00,3.00","D":"-9.00,3.00","E":"-8.00,6.00","F":"-11.00,3.00"},"collineations":{"0":"B###A","1":"A###E","2":"F###A","3":"C###B","4":"C###D###F","5":"D###E"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: EqualityRelation{AB=AE},EqualityRelation{∠ABC=∠AED},EqualityRelation{BC=DE},MiddlePointOfSegmentRelation{middlePoint=F,segment=CD},ProveConclusionRelation:[Proof: LinePerpRelation{line1=AF, line2=CD, crossPoint=F}]

110, topic: As shown in the △ABC, AB =AC, AB is the diameter ⊙O to respectively the BC, AC at point D, E, through the tangent point D as ⊙O DF, cross AC at point F . #% # (1) Proof: DF⊥AC; #% # (2) If the radius is ⊙O 4, ∠CDF =22.5 °, find the shaded area #% # <img>.

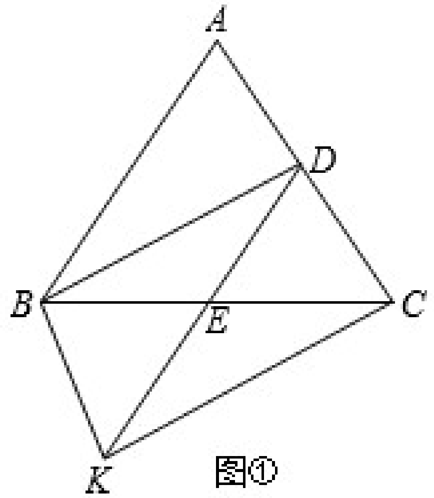


graph:
{"stem":{"pictures":[{"picturename":"1000081030_Q_1.jpg","coordinates":{"A":"1.72,3.61","B":"-1.72,-3.61","C":"4.39,-3.93","D":"1.33,-3.77","E":"3.61,-1.72","F":"4.00,-2.83","O":"0.00,0.00"},"collineations":{"0":"B###O###A","1":"C###D###B","2":"A###E###F###C","3":"D###F"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"A###B###D###E"}]}],"appliedproblems":{}},"substems":[]}

NLP: DiameterRelation{diameter=AB, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, length=null},TriangleRelation:△ABC,EqualityRelation{AB=AC},PointRelation:E,LineContactCircleRelation{line=DF, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2},

contactPoint=Optional.of(D), outpoint=Optional.of(F)},LineCrossRelation [crossPoint=Optional.of(F), iLine1=DF, iLine2=AC],RadiusRelation{radius=null, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, length=Express:[4]},EqualityRelation{∠CDF=(1/8*Pi)},ProveConclusionRelation:[Proof: LinePerpRelation{line1=DF, line2=AC, crossPoint=F}]

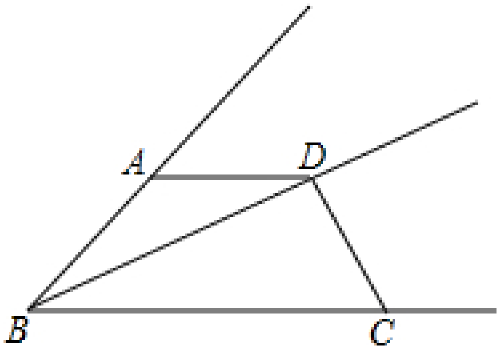
111, topic: FIG ① , in the $ △ABC $, BD is $ $ ∠ABC angle bisector, $ DK∥AB $ BC at point E, and $ DK =BC $, coupled BK, CK (. 1) Proof: $ △BDK≌ △DBC $; #% # (2) If the $ BA =BC $, $ BDCK $ quadrilateral guess what special quadrilateral and prove your guess #% # (3) If the $?. ∠BAC =90 ° $ (FIG ②), $ ∠ABC =30 ° $, $ AB =2 \ sqrt {3} $, $ BDCK $ quadrangular seeking area.



graph:
{"stem":{"pictures":[],"appliedproblems":{}},"substems":[{"substemid":"1","questionrelies":"","pictures":[{"picturename":"1000027748_Q_1.jpg","coordinates":{"A":"5.00,7.46","B":"3.00,4.00","C":"7.00,4.00","D":"6.00,5.73","E":"5.00,4.00","K":"4.00,2.27"},"collineations":{"0":"A###B","1":"A###D###C","2":"B###D","3":"B###E###C","4":"B###K","5":"K###E###D","6":"K###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},{"substemid":"2","questionrelies":"1","pictures":[],"appliedproblems":{}},{"substemid":"3","questionrelies":"","pictures":[{"picturename":"1000027748_Q_2.jpg","coordinates":{"A":"6.50,6.60","B":"2.00,4.00","C":"8.00,4.00","D":"7.20,5.39","E":"4.78,4.00","K":"2.00,2.39"},"collineations":{"0":"A###B","1":"A###D###C","2":"B###D","3":"B###E###C","4":"B###K","5":"K###E###D","6":"K###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}}]}

NLP: TriangleRelation:△ABC,AngleBisectorRelation{line=BD,angle=∠ABE, angle1=∠ABD, angle2=∠DBE},LineParallelRelation [iLine1=DK, iLine2=AB],LineCrossRelation [crossPoint=Optional.of(E), iLine1=DK, iLine2=BC],EqualityRelation{DK=BC},SegmentRelation:BK,SegmentRelation:CK,EqualityRelation{AB=BC},Know:QuadrilateralRelation{quadrilateral=BDCK},EqualityRelation{S_BDCK=v_0},EqualityRelation{∠ABE=(1/6*Pi)},EqualityRelation{AB=2*(3^(1/2))},Calculation:(ExpressRelation:[key:]v_0),ProveConclusionRelation:[Proof: TriangleCongRelation{triangleA=△BDK, triangleB=△DBC}],ShapeJudgeConclusionRelation{geoEle=BDCK},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]S_BDCK)}

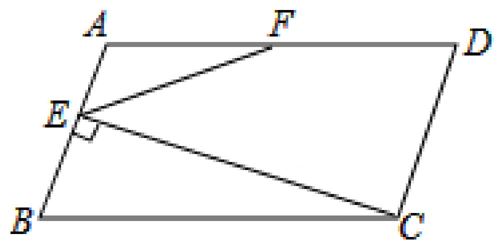
112, topic: FIG, BD is the bisector ∠ABC, AD =CD, verify ∠DAB + ∠BCD =180 ° #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000060078_Q_1.jpg","coordinates":{"A":"1.21,1.61","B":"0.00,0.00","C":"4.63,0.00","D":"3.32,1.61"},"collineations":{"0":"B###A","1":"A###D","2":"B###C","3":"D###C","4":"B###D"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: AngleBisectorRelation{line=BD,angle=∠ABC, angle1=∠ABD, angle2=∠CBD},EqualityRelation{AD=CD},ProveConclusionRelation:[Proof: EqualityRelation{∠BAD+∠BCD=(Pi)}]

113, topic: FIG, parallelogram ABCD is known AB =5, BC =10, F is the midpoint of AD, CE⊥AB at point E, provided ∠ABC =α (60 ° ≤α <90 °)% # # (1) when α =60 °, long seeking CE;.? #% # (2) when 60 ° <α <90 °, if there is a positive integer k, such that if ∠EFD =k∠AEF exists, the value of k is obtained; if not, please explain why #% # <img>.

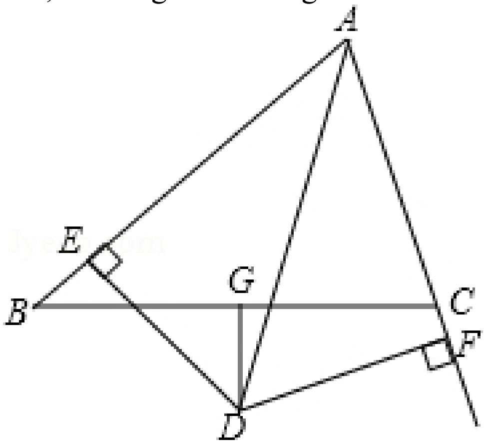


graph:
{"stem":{"pictures":[{"picturename":"1000036948_Q_1.jpg","coordinates":{"A":"-8.29,4.40","B":"-9.00,2.00","C":"-4.00,2.00","D":"-3.29,4.40","F":"-6.19,4.40","E":"-8.59,3.37"},"collineations":{"0":"A###F###D","1":"A###E###B","2":"C###D","3":"B###C","4":"E###C","5":"E###F"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP:
ParallelogramRelation{parallelogram=Parallelogram:ABCD},EqualityRelation{AB=5},EqualityRelation{BC=10},MiddlePointOfSegmentRelation{middlePoint=F,segment=AD},LinePerpRelation{line1=CE, line2=AB, crossPoint=E},EqualityRelation{∠CBE=α, Condition: [[(1/3*Pi)≤α<(1/2*Pi)]]},EqualityRelation{CE=v_0},EqualityRelation{α=(1/3*Pi)},Calculation:(ExpressRelation:[key:]v_0),AtomAttributeRelation{atomAttribute=AtomAttribute{atomExpr=Express:[k], numberType=POSITIVE_INTEGER}},ConditionRelation{ThreeItemsInequalityRelation{multiExpressCompare:(1/3*Pi)<α<(1/2*Pi)}, (ExpressRelation:[key:]k)},Calculation:(ExpressRelation:[key:]k),SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]CE)},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]k)}

114, topic: As shown in the △ABC, the AD is ∠BAC bisector, DG⊥BC and bisects BC, DE⊥AB in

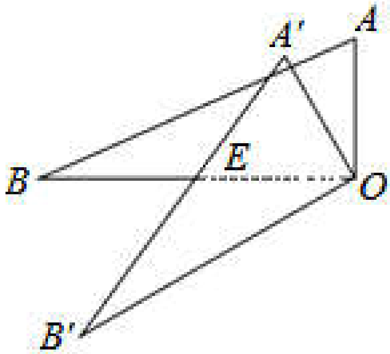
E, DF⊥AC AC extension lines cross in F #% # (1). Prove:. BE =CF; #% # (2) If AB =6, AC =4, seeking AE, BE long #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000080174_Q_1.jpg","coordinates":{"A":"1.00,4.00","B":"-1.46,2.28","C":"1.65,2.11","D":"0.03,1.02","E":"-1.05,2.57","F":"1.81,1.64","G":"0.10,2.19"},"collineations":{"0":"A###E###B","1":"A###D","2":"A###C###F","3":"B###G###C","4":"E###D","5":"G###D","6":"F###D"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleRelation:△ABC,AngleBisectorRelation{line=AD,angle=∠CAE, angle1=∠CAD, angle2=∠DAE},LinePerpRelation{line1=DG, line2=BC, crossPoint=G},LineDecileSegmentRelation [iLine1=DG, iLine2=BC, crossPoint=Optional.of(G)],LinePerpRelation{line1=DE, line2=AB, crossPoint=E},LinePerpRelation{line1=DF, line2=AC, crossPoint=F},LineCrossRelation [crossPoint=Optional.of(F), iLine1=DF, iLine2=AC],EqualityRelation{AB=6},EqualityRelation{AC=4},Calculation:(ExpressRelation:[key:]AE),Calculation:(ExpressRelation:[key:]BE),ProveConclusionRelation:[Proof: EqualityRelation{BE=CF}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]AE)},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]BE)}

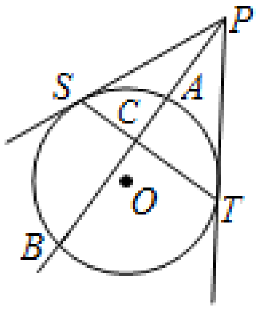
115, topic: FIG, △AOB in, ∠AOB =90 °, AO =3, BO =6, △AOB △A'OB rotation about the counter-clockwise vertex O 'at this time segment A'B' and BO E is the midpoint of the intersection BO, find the length of the line B'E. #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000070466_Q_1.jpg","coordinates":{"A":"-9.00,6.00","B":"-3.00,4.00","O":"-3.00,6.00","A'":"-4.81,8.40","B'":"-7.79,2.39","E":"-6.00,6.00"},"collineations":{"0":"A###B","1":"B###O","2":"A'###O","3":"B'###O","4":"A###E###O","5":"A'###E###B'"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: LineCrossRelation [crossPoint=Optional.of(E), iLine1=A'B', iLine2=BO],EqualityRelation{B'E=v_0},TriangleRelation:△AOB,EqualityRelation{∠BOE=(1/2*Pi)},EqualityRelation{AO=3},EqualityRelation{BO=6},Calculation:(ExpressRelation:[key:]v_0),SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]B'E)}

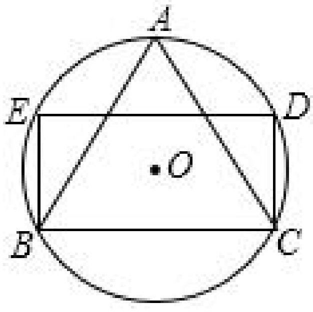
116, topic: FIG., It is known that the point P is outside ⊙O, PS, PT is ⊙O two tangent through point P as the secant PAB ⊙O, in cross ⊙O A, B points, and post ST at points C, confirmation $ \ frac {1} {PC} =\ frac {1} {2} (\ frac {1} {PA} + \ frac {1} {PB}) $. #% # < img>



graph:
{"stem":{"pictures":[{"picturename":"1000052579_Q_1.jpg","coordinates":{"A":"-4.24,4.23","B":"-5.78,1.18","C":"-4.67,3.38","S":"-5.90,3.91","P":"-3.30,6.09","T":"-3.07,2.70","O":"-4.79,2.59"},"collineations":{"0":"P###T","1":"S###P","2":"S###C###T","3":"P###A###C###B"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"S###A###T###B"}]}],"appliedproblems":{}},"substems":[]}

NLP: PointOutCircleRelation{point=Pcurve=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, points=[P]},LineContactCircleRelation{line=PS, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, contactPoint=Optional.of(S), outpoint=Optional.of(P)},LineContactCircleRelation{line=PT, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, contactPoint=Optional.of(T), outpoint=Optional.of(P)},ProveConclusionRelation:[Proof: EqualityRelation{(1/(CP))=(1/2)*((1/(AP))+(1/(BP)))}]

117, topic: FIG radius is $ ⊙O $ 1, $ △ABC $ $ ⊙O $ is inscribed equilateral triangle, the point D, E on the circle, a rectangular quadrilateral BCDE, find the area of a rectangle . #% # <img>

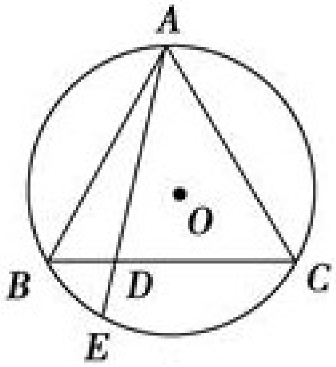


graph:
{"stem":{"pictures":[{"picturename":"F06509CA3C974FC18706AD56696F7E0A.jpg","coordinates":{"A":"-11.00,8.00","B":"-13.60,3.50","C":"-8.40,3.50","D":"-8.40,6.50","E":"-13.60,6.50","O":"-11.00,5.00"},"collineations":{"0":"C###A","1":"B###A","2":"B###C","3":"B###E","4":"C###D","5":"E###D"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"C###D###A###B###E"}]}],"appliedproblems":{}},"substems":[]}

NLP:
RectangleRelation{rectangle=Rectangle:BCDE},EqualityRelation{S_BCDE=v_0},RadiusRelation{radius=

null, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, length=Express:[1]},PointOnCircleRelation{circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, points=[D, E]},RectangleRelation{rectangle=Rectangle:BCDE},Calculation:(ExpressRelation:[key:]v_0),SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]S_BCDE)}

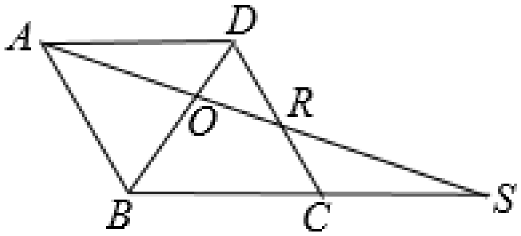
118, topic: as shown, inscribed in the circle $ \triangle ABC $, $ AB =AC $, D BC is the edge point, to verify the AD circular cross point E.?#%#(1): $ {AB} ? ^ 2 =AD \cdot AE $ #% # (2) when D is extended line BC point, (1) the conclusions it has also set up if established, give proof;? If established, please explain why.



graph: {"stem":{"pictures":[{"picturename":"1000008181_Q_1.jpg","coordinates":{"A":"0.00,6.00","B":"-4.00,0.00","C":"4.00,0.00","D":"-1.39,0.00","E":"-1.91,-2.22","O":"0.00,1.67"},"collineations":{"0":"B###A","1":"A###C","2":"B###C","3":"D###A###E"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"A###B###C###E"}]}],"appliedproblems":{}},"substems":[{"substemid":"2","questionrelies":"","pictures":[{"picturename":"3.4.1B_4.jpg","coordinates":{"D":"8.00,0.00","E":"4.16,2.88"},"collineations":{"0":"B###C###E","1":"D###A###E"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"A###B###C###D"}]}],"appliedproblems":{}}]}

NLP: InscribedShapeOfCircleRelation{closedShape=△ABC, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}},EqualityRelation{AB=AC},PointOnLineRelation{point=D, line=BC, isConstant=false, extension=false},LineCrossCircleRelation{line=AD, circle=⊙O, crossPoints=[E], crossPointNum=1},PointOnLineRelation{point=D, line=BC, isConstant=false, extension=true},ProveConclusionRelation:[Proof: EqualityRelation{(AB)^2=AD*AE}]

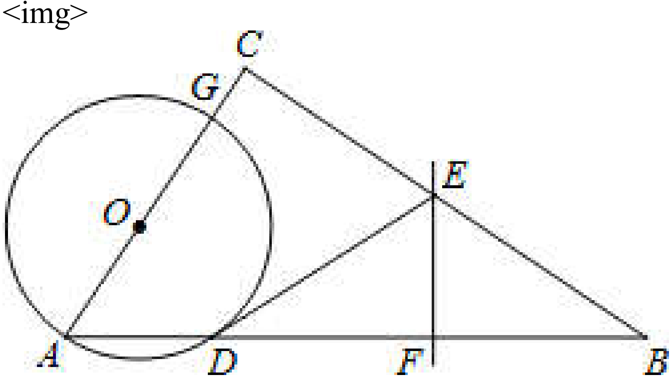
119, topic: FIG known: ABCD in the diamond, O is connected to a bit extension and AO, with DC at point R, and the extended line BC at point S. If AD =4 on a diagonal line BD. , ∠DCB =60 °, BS =10 #% # (1) of the required length AS;. #% # (2) Determine the length of OR #% # <img>.



graph: {"stem":{"pictures":[{"picturename":"1000040744_Q_1.jpg","coordinates":{"A":"-1.00,1.73","B":"0.00,0.00","C":"2.00,0.00","D":"1.00,1.73","O":"0.71,1.24","R":"1.40,1.04","S":"5.00,0.00"},"collineations":{"0":"A###B","1":"B###C###S","2":"C###R###D","3":"D###A","4":"A###O###R###S","5":"B###O###D"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: RhombusRelation{rhombus=Rhombus:ABCD},PointOnLineRelation{point=O, line=BD, isConstant=false, extension=false},SegmentRelation:AO,LineCrossRelation [crossPoint=Optional.of(R), iLine1=AO, iLine2=DC],LineCrossRelation [crossPoint=Optional.of(S), iLine1=AO, iLine2=BC],EqualityRelation{AD=4},EqualityRelation{∠BCR=(1/3*Pi)},EqualityRelation{BS=10},EqualityRelation{AS=v_0},Calculation:(ExpressRelation:[key:]v_0),EqualityRelation{OR=v_1},Calculation:(ExpressRelation:[key:]v_1),SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]AS)},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]OR)}

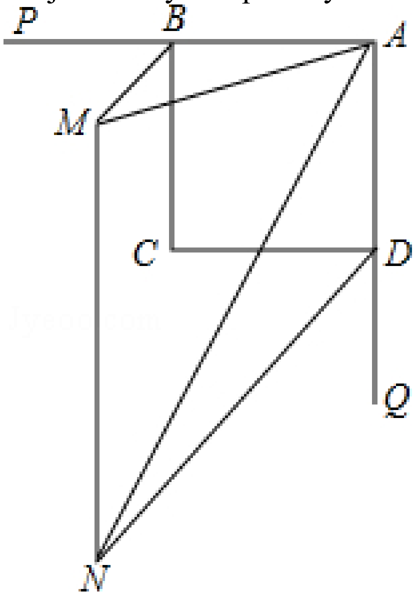
120, topic: As shown in the △ABC, ∠C =90 °, G is a fixed point (point G does not coincide with A, C) on the line segment AC, AG to the diameter at point D ⊙O cross AB , the perpendicular bisector of the straight line EF the BD, as pedal F., EF BC at point E, is connected DE #% # (1) Prove:. DE is tangent ⊙O;% # # (2) when the $ \ cos a =\ frac {1} {2} $, $ AB =8 \ sqrt {3} $, $ AG =2 \ sqrt {3} $, seeking BE long; #% # (3) if $ \ cos a =\ frac {1} {2} $, $ AB =8 \ sqrt {3} $, direct write range of the line BE. #% # <img>



graph:
{"stem":{"pictures":[],"appliedproblems":{}},"substems":[{"substemid":"1","questionrelies":"","pictures":[{"picturename":"1000080890_Q_1.jpg","coordinates":{"A":"0.00,0.00","B":"6.93,0.00","C":"1.73,3.00","D":"1.21,0.00","E":"4.07,1.65","F":"4.07,0.00","G":"1.21,2.10","O":"0.61,1.05"},"collineations":{"0":"A###D###F###B","1":"C###G###O###A","2":"C###E###B","3":"D###E","4":"F###E"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},{"substemid":"2","questionrelies":"","pictures":[{"picturename":"1000080890_Q_1.jpg","coordinates":{"A":"0.00,0.00","B":"6.93,0.00","C":"1.73,3.00","D":"0.87,0.00","E":"3.90,1.75","F":"3.90,0.00","G":"0.87,1.50","O":"0.43,0.75"},"collineations":{"0":"A###D###F###B","1":"C###G###O###A","2":"C###E###B","3":"D###E","4":"F###E"},"variable-equals":{},"circles":[]}],"appliedproblems":{}}]}

NLP: DiameterRelation{diameter=AG, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, length=null},NegativeRelation{relation=PointCoincidenceRelation{point1=G, point2=A}},NegativeRelation{relation=PointCoincidenceRelation{point1=G, point2=C}},TriangleRelation:△ABC,EqualityRelation{∠ECG=(1/2*Pi)},PointOnLineRelation{point=G, line=AC, isConstant=false, extension=false},LineCrossCircleRelation{line=AB, circle=⊙O, crossPoints=[D], crossPointNum=1},MiddlePerpendicularRelation [iLine1=EF, iLine2=BD, crossPoint=Optional.of(F)],LineCrossRelation [crossPoint=Optional.of(E), iLine1=EF, iLine2=BC],SegmentRelation:DE,EqualityRelation{BE=v_0},EqualityRelation{cos(∠DAO)=(1/2)},EqualityRelation{AB=8*(3^(1/2))},EqualityRelation{AG=2*(3^(1/2))},Calculation:(ExpressRelation:[key:]v_0),EqualityRelation{cos(∠DAO)=(1/2)},EqualityRelation{AB=8*(3^(1/2))},SegmentRelation:BE,取值范围：(ExpressRelation:[key:]BE),ProveConclusionRelation:[Proof:　LineContactCircleRelation{line=DE, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, contactPoint=Optional.absent(), outpoint=Optional.absent()}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]BE)},SolutionConclusionRelation{relation=取值范围：(ExpressRelation:[key:]BE)}

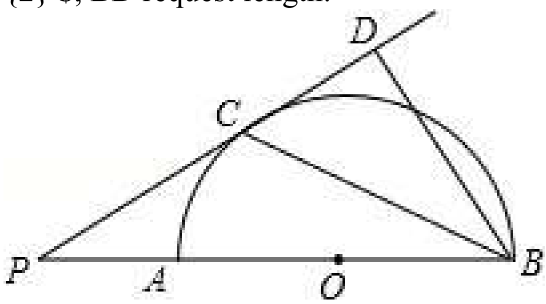
121, topic: Given: FIG square ABCD, BM, DN, respectively, bisecting the square two outer corners, and satisfies $ \ angle MAN =45 ^ \ circ $, link MN.?#%#(1) if the square side length a, seeking $ BM \ cdot DN $ value.? #% # (2) in terms of BM, DN, MN is surrounded by three sides of a triangle, triangle shape conjecture try and prove your conclusions.



graph:
{"stem":{"pictures":[{"picturename":"1000010830_Q_1.jpg","coordinates":{"A":"15.00,5.00","B":"10.00,5.00","C":"10.00,0.00","D":"15.00,0.00","M":"8.19,3.19","N":"8.19,-6.74","P":"6.00,5.00","Q":"15.00,-4.00"},"collineations":{"0":"B###P###A","1":"B###M","2":"D###Q###A","3":"A###M","4":"N###M","5":"C###D","6":"A###N","7":"D###N","8":"C###B"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[{"substemid":"1","questionrelies":"2","pictures":[],"appliedproblems":{}},{"substemid":"2","questionrelies":"1","pictures":[],"appliedproblems":{}}]}

NLP: SquareRelation{square=Square:ABCD},EqualityRelation{∠MAN=(1/4*Pi)},SegmentRelation:MN,SquareRelation{square=Square:ABCD, length=a},Calculation:(ExpressRelation:[key:]BM*DN),SegmentRelation:BM,SegmentRelation:DN,SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]BM*DN)}

122, topic:.? As shown, AB is the diameter of the semicircle O, the point P on the extension line of the BA, the PD ⊙O cut at the point C, $ BD⊥PD $, pedal is D, connected BC #% # (1) Proof: BC bisects $ ∠PBD $; #% # (2) Prove:? $ {{BC} ^ {2}} =AB \ cdot BD $; #% # (3) If the $ PA =6 $? , $ PC =6 \ sqrt {2} $, BD request length.

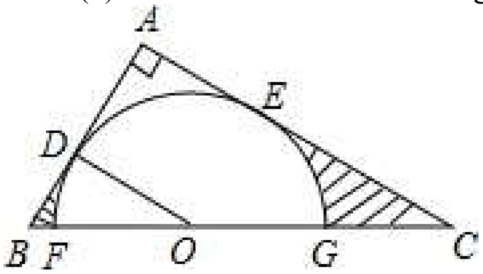


graph:
{"stem":{"pictures":[{"picturename":"1000026758_Q_1.jpg","coordinates":{"A":"9.00,7.00","B":"15.00,7.00","C":"11.00,9.83","D":"13.67,10.77","O":"12.00,7.00","P":"3.00,7.00"},"collineations":{"0":"B###D","1"

:"B###C","2":"D###C###P","3":"B###O###A###P"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"A###B###C"}]}],"appliedproblems":{}},"substems":[]}

NLP: DiameterRelation{diameter=AB, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, length=null},PointOnLineRelation{point=P, line=BA, isConstant=false, extension=true},LineContactCircleRelation{line=PD, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, contactPoint=Optional.of(C), outpoint=Optional.absent()},LinePerpRelation{line1=BD, line2=PD, crossPoint=D},SegmentRelation:BC,EqualityRelation{BD=v_0},EqualityRelation{AP=6},EqualityRelation{CP=6*(2^(1/2))},Calculation:(ExpressRelation:[key:]v_0),ProveConclusionRelation:[Proof: AngleBisectorRelation{line=BC,angle=∠DBO, angle1=∠CBD, angle2=∠CBO}],ProveConclusionRelation:[Proof: EqualityRelation{((BC)^2)=AB*BD}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]BD)}

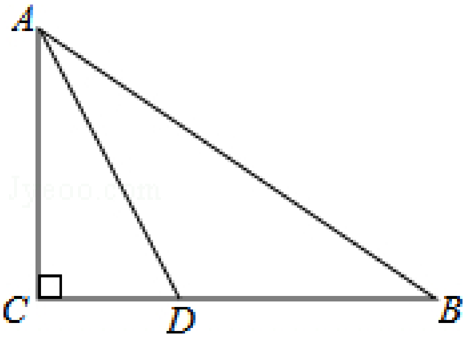
123, topic: As shown in the $ Rt △ABC $, $ ∠A =90 ° $, O BC is the edge point to the center O of the semicircular edge AB tangent to points D, and AC, BC side respectively, at point E, F, G, is connected OD, known $ BD =2 $, $ AE =3 $, $ \ tan \ angle BOD =\ frac {2} {3} $.? #% # (1) seeking $ ⊙O $ radius OD; #% # (2) Prove:?? AE is $ ⊙O $ tangent; #% # (3) find the shaded areas in FIG portion and two.



graph:
{"stem":{"pictures":[{"picturename":"1000026757_Q_1.jpg","coordinates":{"A":"2.89,5.10","B":"0.54,1.00","C":"10.03,1.00","D":"1.40,2.49","E":"5.49,3.60","F":"1.00,1.00","G":"7.00,1.00","O":"4.00,1.00"},"collineations":{"0":"O###D","1":"A###D###B","2":"A###E###C","3":"B###F###O###G###C"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"D###E###F###G"}]}],"appliedproblems":{}},"substems":[]}

NLP: CircleCenterRelation{point=O, conic=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}},RightTriangleRelation:RightTriangle:△ABC[Optional.of(A)],EqualityRelation{∠DAE=(1/2*Pi)},PointOnLineRelation{point=O, line=BC, isConstant=false, extension=false},LineContactCircleRelation{line=AB, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, contactPoint=Optional.of(D), outpoint=Optional.absent()},SegmentRelation:AB,PointRelation:F,PointRelation:G,SegmentRelation:OD,EqualityRelation{BD=2},EqualityRelation{AE=3},EqualityRelation{tan(∠DOF)=(2/3)},ProveConclusionRelation:[Proof: LineContactCircleRelation{line=AE, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, contactPoint=Optional.of(E), outpoint=Optional.of(A)}]

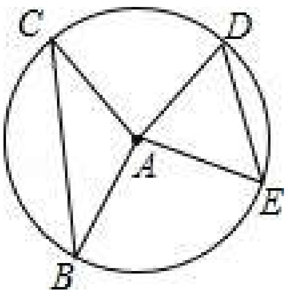
124, topic: Rt △ABC in the, ∠C =90 °, AD equally ∠CAB, AC =6, BC =8, the length of the CD seek #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000031255_Q_1.jpg","coordinates":{"A":"-9.00,5.00","B":"-5.00,2.00","C":"-9.00,2.00","D":"-7.50,2.00"},"collineations":{"0":"A###D","1":"A###B","2":"A###C","3":"B###D###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP:
EqualityRelation{CD=v_0},RightTriangleRelation:RightTriangle:△ABC[Optional.of(C)],EqualityRelation{∠ACD=(1/2*Pi)},AngleBisectorRelation{line=AD,angle=∠BAC, angle1=∠BAD, angle2=∠CAD},EqualityRelation{AC=6},EqualityRelation{BC=8},Calculation:(ExpressRelation:[key:]v_0),Solution ConclusionRelation{relation=Calculation:(ExpressRelation:[key:]CD)}

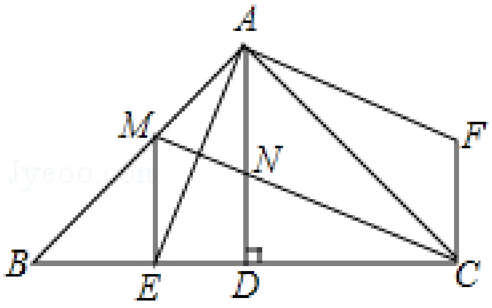
125, topic: FIG radius $ ⊙A $ 5, the central angle of the chord BC, ED of the respectively $ ∠BAC $, $ ∠EAD $ known $ DE =6 $, $ ∠BAC + ∠. EAD =180 ° $, seeking chord BC chord center distance.



graph:
{"stem":{"pictures":[{"picturename":"1000024907_Q_1.jpg","coordinates":{"A":"0.00,0.00","B":"-3.00,-4.00","C":"-3.00,4.00","D":"1.40,4.800","E":"5.00,0.00"},"collineations":{"0":"A###B","1":"B###C","2":"C###A","3":"D###A","4":"D###E","5":"A###E"},"variable-equals":{},"circles":[{"center":"A","pointincircle":"C###D###B###E"}]}],"appliedproblems":{}},"substems":[]}

NLP: RadiusRelation{radius=null, circle=Circle[⊙A]{center=A, analytic=(x-x_A)^2+(y-y_A)^2=r_A^2}, length=Express:[5]},ChordOfCircleRelation{chord=BC, circle=Circle[⊙A]{center=A, analytic=(x-x_A)^2+(y-y_A)^2=r_A^2}, chordLength=null,straightLine=null},AngleRelation{angle=∠DAE},EqualityRelation{DE=6},EqualityRelation{∠BAC+∠DAE=(Pi)}

126, topic: FIG, △ABC medium, ∠BAC =90 °, AB =AC, AD⊥BC, pedal is point D, AE equally ∠BAD, BC at point E. F a little outside △ABC, so FA⊥AE, FC⊥BC #% # (1) Prove:. BE =CF; #% # (2) takes on AB point M, so that BM =2DE, connector MC, AD cross at point N, the connection ME . #% # confirmation: ① ME⊥BC; ② DE =DN #% # <img>.



graph:
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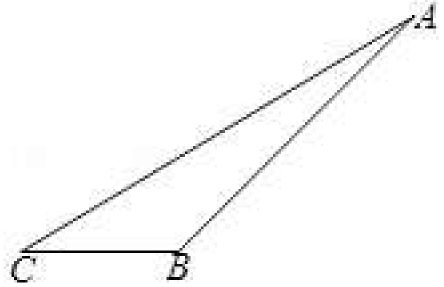
NLP: TriangleRelation:△ABC,EqualityRelation{∠BAC=(1/2*Pi)},EqualityRelation{AB=AC},LinePerpRelation{line1=AD, line2=BC, crossPoint=D},AngleBisectorRelation{line=AE,angle=∠BAD, angle1=∠BAE, angle2=∠DAE},LineCrossRelation [crossPoint=Optional.of(E), iLine1=AE, iLine2=BC],PositionOfPoint2RegionRelation{point=F, region=EnclosedRegionRelation{name=ABC, closedShape=△ABC}, position=outer},LinePerpRelation{line1=FA, line2=AE, crossPoint=A},LinePerpRelation{line1=FC, line2=BC, crossPoint=C},PointOnLineRelation{point=M, line=AB, isConstant=false, extension=false},EqualityRelation{BM=2*DE},SegmentRelation:MC,LineCrossRelation [crossPoint=Optional.of(N), iLine1=MC, iLine2=AD],SegmentRelation:ME,ProveConclusionRelation:[Proof: EqualityRelation{BE=CF}]

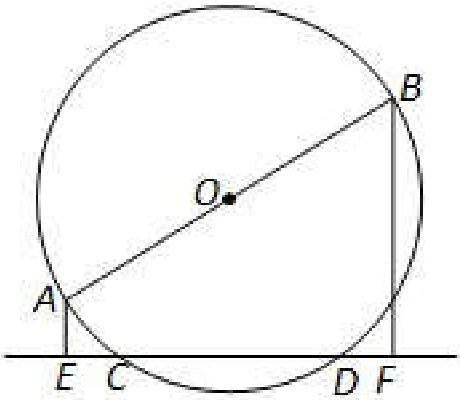
127, topic: Given: As shown in $ \ vartriangle ABC $ in, $ BC =2 $, $ {{S} _ {\ vartriangle}} _ {ABC} =3 $, $ \ angle ABC =135 ^ \ circ $, seeking $ {{AC} ^ {2}} $, $ {{AB} ^ {2}} $ long.



graph:
{"stem":{"pictures":[{"picturename":"1000027619_Q_1.jpg","coordinates":{"A":"3.00,3.00","B":"0.00,0.00","C":"-2.00,0.00"},"collineations":{"0":"B###C","1":"A###B","2":"A###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleRelation: △ABC, EqualityRelation {BC =2}, EqualityRelation {(S_ △) * _ ABC =3}, EqualityRelation {∠ABC =(3/4 * Pi)}, evaluation (size) :(ExpressRelation: [key:] ((AB) ^ 2)), evaluation (size) :(ExpressRelation: [key:] ((AB) ^ 2)), SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] ((AB) ^ 2))}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] ((AB) ^ 2))}

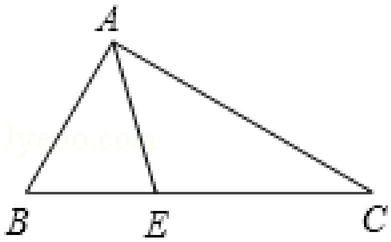
128, topic: as shown, is $ \odot O $ AB is known diameter, CD chord, $ AE\perp CD $, $ BF\perp CD $, Proof: $ EC =DF $



graph:
{"stem":{"pictures":[{"picturename":"1941A79572FF4CF19596DDC5D9C90EE7_Q_1.jpg","coordinates":{"A":"-15.37,3.84","B":"-8.63,8.16","C":"-14.65,3.00","D":"-9.35,3.00","E":"-15.37,3.00","F":"-8.63,3.00","O":"-12.00,6.00"},"collineations":{"0":"B###O###A","1":"A###E","2":"B###F","3":"E###C###D###F"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"C###A###B###D"}]}],"appliedproblems":{}},"substems":[]}

NLP: DiameterRelation{diameter=AB, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, length=null},ChordOfCircleRelation{chord=CD, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, chordLength=null,straightLine=null},LinePerpRelation{line1=AE, line2=CD, crossPoint=E},LinePerpRelation{line1=BF, line2=CD, crossPoint=F},ProveConclusionRelation:[Proof: EqualityRelation{CE=DF}]

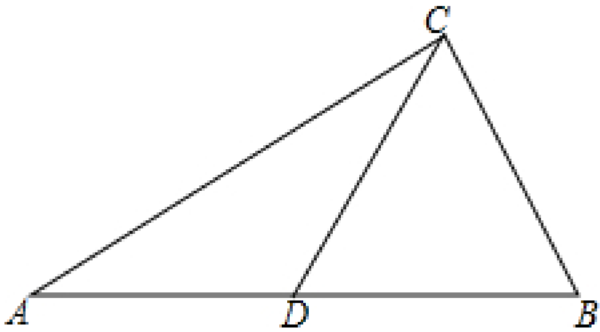
129, topic: As shown in the △ABC, ∠B =60 °, ∠C =30 °, AE is the bisector of △ABC #% # (1) for high-AD edge BC; #% #. (2) find the degree ∠DAE. #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000030697_Q_1.jpg","coordinates":{"A":"1.25,2.17","B":"0.00,0.00","C":"5.01,0.00","D":"1.25,0.00","E":"1.83,0.00"},"collineations":{"0":"B###D###E###C","1":"B###A","2":"A###D","3":"E###A","4":"A###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleRelation:△ABC,EqualityRelation{∠ABD=(1/3*Pi)},EqualityRelation{∠ACE=(1/6*Pi)},TriangleRelation:△ABC,AngleBisectorRelation{line=AE,angle=∠BAC, angle1=∠CAE, angle2=∠BAE},LinePerpRelation{line1=BC, line2=AD, crossPoint=D},SegmentRelation:AD,LinePerpRelation{line1=AD, line2=BD, crossPoint=D},Calculation:AngleRelation{angle=∠DAE},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]∠DAE)}

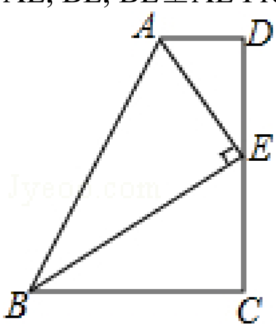
130, topic: As shown in △ABC, it is known D is the midpoint of AB, AC =12, BC =5, $ CD =\ frac {13} {2} $ Proof: △ABC is a right triangle. #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000035800_Q_1.jpg","coordinates":{"A":"-24.00,1.00","B":"-11.00,1.00","C":"-12.92,5.62","D":"-17.50,1.00"},"collineations":{"0":"A###C","1":"C###B","2":"C###D","3":"A###D###B"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP:
TriangleRelation:△ABC,MiddlePointOfSegmentRelation{middlePoint=D,segment=AB},EqualityRelation{AC=12},EqualityRelation{BC=5},EqualityRelation{CD=(13/2)},ProveConclusionRelation:[Proof: RightTriangleRelation:RightTriangle:△ABC[Optional.of(C)]]

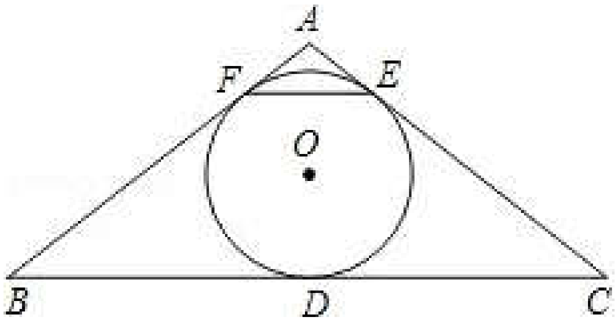
131, topic: As shown, the quadrilateral ABCD, AD // BC, E is the midpoint of the CD, the connecting AE, BE, BE⊥AE Proof:. AB =BC + AD #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000033511_Q_1.jpg","coordinates":{"A":"3.20,6.00","B":"0.00,0.00","C":"5.00,0.00","D":"5.00,6.00","E":"5.00,3.00"},"collineations":{"0":"A###E","1":"E###B","2":"B###A","3":"A###D","4":"D###E###C","5":"C###B"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: Know:QuadrilateralRelation{quadrilateral=ABCD},LineParallelRelation [iLine1=AD, iLine2=BC],MiddlePointOfSegmentRelation{middlePoint=E,segment=CD},SegmentRelation:AE,SegmentRelation:BE,LinePerpRelation{line1=BE, line2=AE, crossPoint=E},ProveConclusionRelation:[Proof: EqualityRelation{AB=BC+AD}]

132, topic: As shown in the △ABC, AB =AC, the inscribed circle O and the side BC, AC, AB respectively tangent to D, E, F #% # (1) Prove:. BF =CE; #% # (2) if ∠C =30 °, $ CE =2 \ sqrt {3} $, AC seeking long. #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000008275_Q_1.jpg","coordinates":{"A":"0.00,2.00","B":"-3.46,0.00","C":"3.46,0.00","E":"0.46,1.73","D":"0.00,0.00","F":"-0.46,1.73","O":"0.00,0.93"},"collineations":{"0":"A###E###C","1":"A###B###F","2":"B###D###C","3":"E###F"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"D###E###F"}]}],"appliedproblems":{}},"substems":[]}

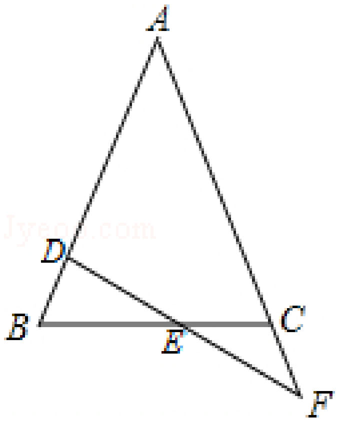
NLP:
TriangleRelation:△ABC,EqualityRelation{AB=AC},PointRelation:E,PointRelation:F,EqualityRelation{AC=v_0},EqualityRelation{∠DCE=(1/6*Pi)},EqualityRelation{CE=2*(3^(1/2))},Calculation:(ExpressRelation:[key:]v_0),ProveConclusionRelation:[Proof: EqualityRelation{BF=CE}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]AC)}

133, topic: As shown in the square ABCD, AB =4, P is a fixed point (point P does not C, D overlap) the edge of the CD, and a straight line through the point P BC extended line at point E, and AD at point F, and CP =CE, connected DE, BP, BF, set CP =x, △PBF area is $ {{S} _ {1}} $, △PDE area is $ {{S . {2}}} _ $ #% # (1) Proof: BP⊥DE; #% # (2) find $ {{S} _ {1}} - {{S} _ {2}} $ about x function formula, and write the range of x; #% # (3) are required when ∠PBF =30 ° and when ∠PBF =45 °, $ {{S} _ {1}} - {{S {2}}} _ value of $. #% # <img>

graph:

NLP: NegativeRelation{relation=PointCoincidenceRelation{point1=P, point2=C}},NegativeRelation{relation=PointCoincidenceRelation{point1=P, point2=D}},SquareRelation{square=Square:ABCD},EqualityRelation{AB=4},PointOnLineRelation{point=P, line=CD, isConstant=false, extension=false},PointOnLineRelation{point=P, line=StraightLine[l_0] analytic :y=k_l_0*x+b_l_0 slope:null b:null isLinearFunction:false, isConstant=false, extension=false},LineCrossRelation [crossPoint=Optional.of(E), iLine1=StraightLine[l_0] analytic :y=k_l_0*x+b_l_0 slope:null b:null isLinearFunction:false, iLine2=BC],LineCrossRelation [crossPoint=Optional.of(F), iLine1=StraightLine[l_0] analytic :y=k_l_0*x+b_l_0 slope:null b:null isLinearFunction:false, iLine2=AD],EqualityRelation{CP=CE},SegmentRelation:DE,SegmentRelation:BP,SegmentRelation:BF,EqualityRelation{CP=x},EqualityRelation{S_△BFP=S_1},EqualityRelation{S_△DEP=S_2},DualExpressRelation:DualExpressRelation{expresses=[Express:[S_1-S_2], Express:[x]]},取值范围：(ExpressRelation:[key:]x),Calculation:(ExpressRelation:[key:]S_1-S_2),ProveConclusionRelation:[Proof: LinePerpRelation{line1=BP, line2=DE, crossPoint=}],SolutionConclusionRelation{relation=DualExpressRelation:DualExpressRelation{expresses=[Express:[S_1-S_2], Express:[x]]}},SolutionConclusionRelation{relation=取值范围：(ExpressRelation:[key:]x)},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]S_1-S_2)}

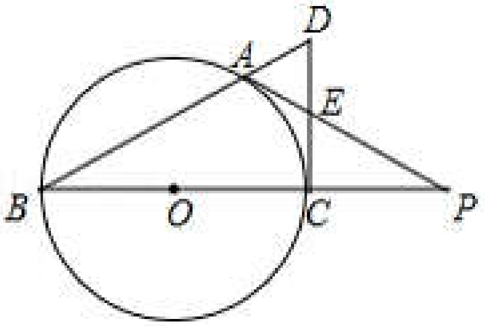
134, topic: the known △ABC, AB =AC, DF straight line AB in the cross points D, BC at point E, extension lines cross AC at point F, BD =CF, Proof: . DE =EF #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000030932_Q_1.jpg","coordinates":{"A":"-9.00,6.00","B":"-10.59,2.02","C":"-7.41,2.03","D":"-10.19,3.01","E":"-8.63,2.03","F":"-7.00,1.00"},"collineations":{"0":"B###D###A","1":"A###C###F","2":"C###E###B","3":"D###E###F"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleRelation:△ABC,EqualityRelation{AB=AC},LineCrossRelation [crossPoint=Optional.of(D), iLine1=DF, iLine2=AB],LineCrossRelation [crossPoint=Optional.of(E), iLine1=DF, iLine2=BC],LineCrossRelation [crossPoint=Optional.of(F), iLine1=DF, iLine2=AC],EqualityRelation{BD=CF},ProveConclusionRelation:[Proof: EqualityRelation{DE=EF}]

135, topic: As shown, the BC $ a $ $ \ odot O $ diameter, that is $ A $ $ \ odot O $ on, over point for $ C $ $ \ odot O $ tangent to the cross-$ $ BA extension line to a point $ D $, $ midpoint take the CD $ $ E $, $ AE $ extension line of the BC $ $ extension lines intersect at the point $ P $ #% # (1) Prove:.? $ AP $ is the $ \ odot O $ tangent;? #% # (2) $ OC =CP $, $ AB =6 $, $ CD $ seek long.

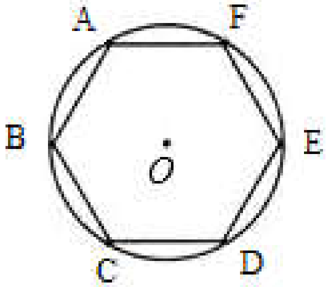


graph:
{"stem":{"pictures":[{"picturename":"1000010170_Q_1.jpg","coordinates":{"A":"1.74,2.99","B":"-3.46,0.00","C":"3.46,0.00","D":"3.46,4.00","E":"3.46,1.99","P":"6.87,0.00","O":"0.00,0.00"},"collineations":{"0":"B###A###D","1":"C###E###D","2":"A###P###E","3":"B###O###C###P"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"A###B###C"}]}],"appliedproblems":{}},"substems":[{"substemid":"1","questionrelies":"","pictures":[],"appliedproblems":{}},{"substemid":"2","questionrelies":"1","pictures":[],"appliedproblems":{}}]}

NLP: MiddlePointOfSegmentRelation{middlePoint=E,segment=CD},DiameterRelation{diameter=BC, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, length=null},PointOnCircleRelation{circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, points=[A]},LineContactCircleRelation{line=CE, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, contactPoint=Optional.of(C), outpoint=Optional.of(E)},PointRelation:E,LineCrossRelation [crossPoint=Optional.of(P), iLine1=AE,

iLine2=BC],EqualityRelation{CD=v_1},EqualityRelation{CO=CP},EqualityRelation{AB=6},Calculation:(ExpressRelation:[key:]v_1),ProveConclusionRelation:[Proof: LineContactCircleRelation{line=AP, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, contactPoint=Optional.of(A), outpoint=Optional.of(P)}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]CD)}

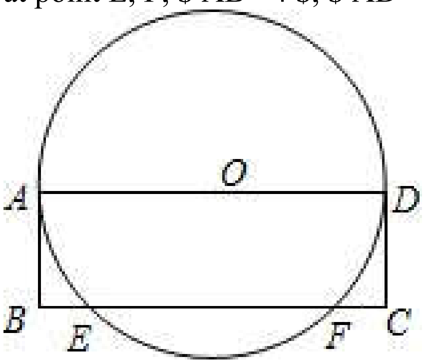
136, topic: FIG known ⊙O perimeter equal to $ 6πcm $, then the area of the regular hexagon ABCDEF of circular #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000083407_Q_1.jpg","coordinates":{"A":"-0.99,1.69","B":"-1.96,-0.02","C":"-0.96,-1.70","D":"0.99,-1.69","E":"1.96,-0.03","F":"0.96,1.70","O":"0.00,0.00"},"collineations":{"0":"A###B","1":"B###C","2":"C###D","3":"D###E","4":"E###F","5":"A###F"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"A###B###C###D###E###F"}]}],"appliedproblems":{}},"substems":[]}

NLP: EqualityRelation{C_O=v_0},EqualityRelation{v_0=6*Pi*c*m}

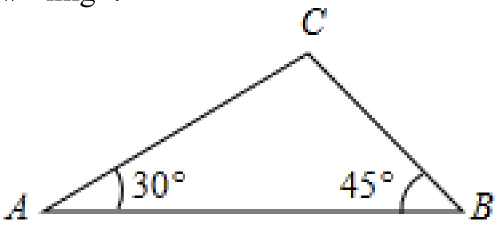
137, topic: FIG quadrilateral ABCD $ $ is rectangular, the diameter of the AD $ ⊙O $ deposit side BC at point E, F, $ AB =4 $, $ AD =12 $ EF segment length requirements.



graph:
{"stem":{"pictures":[{"picturename":"1A1B9A2D68BA400788D6220CF3B816E5_Q_1.jpg","coordinates":{"A":"-16.00,7.00","B":"-16.00,3.00","C":"-4.00,3.00","D":"-4.00,7.00","E":"-14.47,3.00","F":"-5.53,3.00","O":"-10.00,7.00"},"collineations":{"0":"A###B","1":"A###O###D","2":"B###E###F###C","3":"D###C"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"A###D###E###F"}],"appliedproblems":{}}]},"substems":[]}

NLP: DiameterRelation{diameter=AD, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, length=null},EqualityRelation{EF=v_0},RectangleRelation{rectangle=Rectangle:ABCD},LineCrossCircleRelation{line=BC, circle=⊙O, crossPoints=[E], crossPointNum=1},PointRelation:F,EqualityRelation{AB=4},EqualityRelation{AD=12},Calculation:(ExpressRelation:[key:]v_0),SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]EF)}

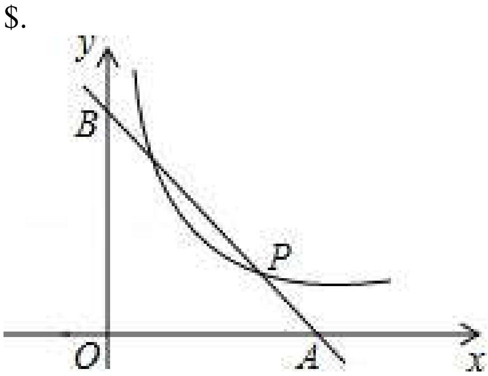
138, topic: As shown in the △ABC, ∠A =30 °, ∠B =45 °, $ AC =2 \ sqrt {3} $, long seeking AB #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000060434_Q_1.jpg","coordinates":{"A":"0.00,0.00","B":"4.73,0.00","C":"3.00,1.73"},"collineations":{"0":"A###B","1":"A###C","2":"B###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: EqualityRelation {AB =v_0}, TriangleRelation: △ABC, EqualityRelation {∠BAC =(1/6 * Pi)}, EqualityRelation {∠ABC =(1/4 * Pi)}, EqualityRelation {AC =2 * (3 ^ (1/2))}, the evaluator (size) :(ExpressRelation: [key:] v_0 [v_0 =v_0]), SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] AB)}

139, topic: As shown, the straight line $ y =-x + 3 $ and x, y axes intersect at points A, B picture, and inverse proportion function at point $ P (2,1) $ (1). find the inverse function of the relationship; #% # (2) provided $ PC \ bot y $ axis at points C, the point a on the point of symmetry y-axis is a '; #% # ① request $ \ vartriangle a \ prime BC perimeter and $ $ \ sin angle BA \ prime C $ value \; #% # ② of the constant m is greater than 1, find the x-axis coordinate of the point m, so that the $ \ sin \ angle BMC =\ frac { 1} {\ pi} $.

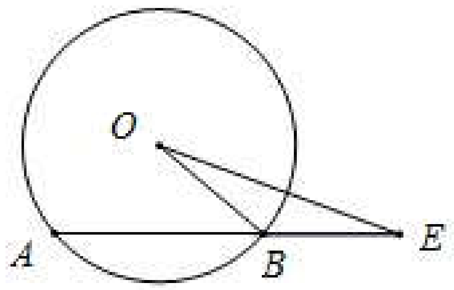


graph:
{"stem":{"pictures":[{"picturename":"1000010411_Q_1.jpg","coordinates":{"A":"3.00,0.00","B":"0.00,3.00","P":"2.00,1.00","O":"0.00,0.00"},"collineations":{"0":"B###A###P"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[{"substemid":"1","questionrelies":"","pictures":[],"appliedproblems":{}},{"substemid":"2","questionrelies":"1","pictures":[{"picturename":"45.jpg","coordinates":{"A'":"-3.00,0.00","C":"0.00,1.00"},"collineations":{"0":"B###A'","1":"C###A'","2":"B###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}}]}

NLP: LineCrossRelation [crossPoint=Optional.of(A), iLine1=StraightLine[n_0] analytic :y=-x+3 slope:-1 b:3 isLinearFunction:true, iLine2=StraightLine[X] analytic :y=0 slope:0 b:0 isLinearFunction:false],LineCrossRelation [crossPoint=Optional.of(B), iLine1=StraightLine[n_0] analytic :y=-x+3 slope:-1 b:3 isLinearFunction:true, iLine2=StraightLine[Y] analytic :x=0 slope: b: isLinearFunction:false],FunctionCrossRelation:{function1=INVERSEPROPORTION,InverseProportion[]:y=-x+3 , function2=CommonFunction[]:y=k_1/x,Domain:null Conditions:[[]], crossPoints=[point1:[P(2,1)]] ,crossPointNum=[1]}, Analytic expression,Equation:InverseProportionFunctionRelation{inverseProportion=INVERSEPROPORTION,InverseProportion[]:y=k_1/x},LinePerpRelation{line1=PC, line2=StraightLine[Y] analytic :x=0 slope: b:

isLinearFunction:false,
crossPoint=C},SymmetricRelation{preData=A,afterData=A',symmetric=StraightLine[Y] analytic :x=0 slope: b: isLinearFunction:false, pivot=},ConstantValueRelation [constantObject=Express:[m]],InequalityRelation{m>1},EqualityRelation{sin(∠BMC)=(1/(Pi))},Coordinate:PointRelation:M,PointOnLineRelation{point=M, line=StraightLine[X] analytic :y=0 slope:0 b:0 isLinearFunction:false, isConstant=false, extension=false},SolutionConclusionRelation{relation=Analytic expression,Equation:InverseProportionFunctionRelation{inverseProportion=INVERSEPROPORTION,InverseProportion[]:y=k_1/x}},SolutionConclusionRelation{relation=Coordinate:PointRelation:M}

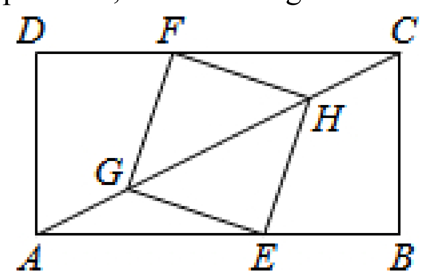
140, topic: FIG at $ \odot O $ radius $ OB =10cm $, E is the chord AB extended line that links the OE, and $ \angle E =30 ° $, $ OE =12cm $, seeking AB .



graph:
{"stem":{"pictures":[{"picturename":"1000025134.jpg","coordinates":{"A":"-4.00,-3.00","B":"4.00,-3.00","E":"5.20,-3.00","O":"0.00,0.00"},"collineations":{"0":"B###A###E","1":"O###B","2":"O###E"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"A###B"}]}],"appliedproblems":{}},"substems":[]}

NLP: ChordOfCircleRelation{chord=AB, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, chordLength=null,straightLine=null},CircleRelation{circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}},RadiusRelation{radius=OB, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, length=Express:[10]},PointOnLineRelation{point=E, line=AB, isConstant=false, extension=true},SegmentRelation:OE,EqualityRelation{∠BEO=(1/6*Pi)},EqualityRelation{EO=12},Calculation:(ExpressRelation:[key:]AB),SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]AB)}

141, topic: As shown in the rectangle ABCD, AB =8, BC =4, at the point E AB, point F on the CD side, points G, H on the diagonal line AC if EGFH quadrilateral is a rhombus. AE seeking long. #% # <img>

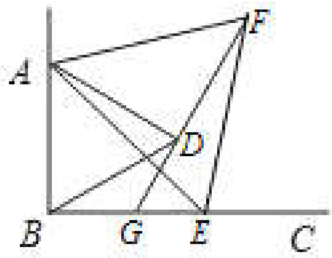


graph:
{"stem":{"pictures":[{"picturename":"22EE08FEA59D4D43B3BDC941948D1F83.jpg","coordinates":{"A":"-15.00,3.00","B":"-7.00,3.00","C":"-7.00,7.00","D":"-15.00,7.00","E":"-10.00,3.00","F":"-12.00,7.00","G":"-13.00,4.00","H":"-9.00,6.00"},"collineations":{"0":"A###B###E","1":"A###C###G###H","2":"A###D",

"3":"B###C","4":"C###D###F","5":"E###H","6":"E###G","7":"F###H","8":"F###G"},"variable-equals":{}
,"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP:
EqualityRelation{AE=v_0},RectangleRelation{rectangle=Rectangle:ABCD},EqualityRelation{AB=8},EqualityRelation{BC=4},PointOnLineRelation{point=E, line=AB, isConstant=false, extension=false},PointOnLineRelation{point=F, line=CD, isConstant=false, extension=false},PointOnLineRelation{point=G, line=AC, isConstant=false, extension=false},PointOnLineRelation{point=H, line=AC, isConstant=false, extension=false},RhombusRelation{rhombus=Rhombus:EGFH},Calculation:(ExpressRelation:[key:]v_0),SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]AE)}

142, topic: FIG known ∠ABC =90 °, △ABD 3 is a side length equilateral triangle, the point E is an arbitrary point (point E does not coincide with the point B) on the BC-rays, coupled AE, AE in for the AEF equilateral triangle above the other, and extend cross-link FD-ray BC at point G #% # (1) shown in (1), when bE =BA, Proof: . △ABE≌ △ADF; #% # (2) FIG. (2), when △AEF and △ABD do not overlap, the degree of seeking ∠FGC; #% # (3) if "AE above for the other known conditions in the AEF equilateral triangle, connected to and extend FD cross-ray BC at point G. "to" below AE of the AEF as an equilateral triangle, cross-linked FD ray BC at point G. "shown in (3), how when the time point where the E BD∥EF ? △AEF and determining the perimeter of the case. #% # <img＞<img＞<img>



图(1)

graph:
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NLP: NegativeRelation{relation=PointCoincidenceRelation{point1=E, point2=B}},EqualityRelation{∠ABG=(1/2*Pi)},RegularTriangleRelation:RegularTriangle:△ABD,EqualityRelation{AB=3},PointOnLineRelation{point=E, line=BC, isConstant=false, extension=false},SegmentRelation:AE,RegularTriangleRelation:RegularTriangle:△AEF,LineCrossRelation [crossPoint=Optional.of(G), iLine1=FD, iLine2=BC],EqualityRelation{BE=AB},Calculation:AngleRelation{angle=∠DGE},EqualityRelation{C_△AEF=v_0},LineCrossRelation [crossPoint=Optional.of(G), iLine1=FD,

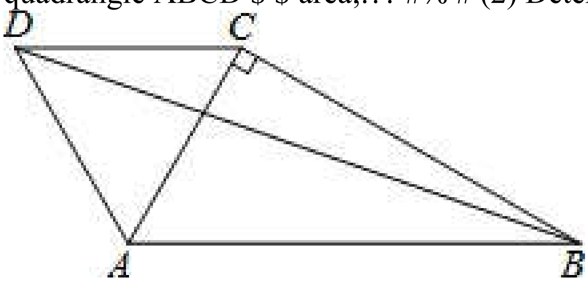
iLine2=BC],LineCrossRelation [crossPoint=Optional.of(G), iLine1=FD, iLine2=BC],Calculation:(ExpressRelation:[key:]v_0),ProveConclusionRelation:[Proof: TriangleCongRelation{triangleA=△ABE, triangleB=△ADF}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]∠DGE)},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]C_△AEF)}

143, topic: As shown in the plane rectangular coordinate system, it is known $ A (0, a) $, $ B (b, 0) $, $ C (3, c) $ three, wherein a, b, c satisfies the relationship: $ \ left | {a - 2} \ right | + {\ left ({b - 3} \ right) ^ 2} + \ sqrt {c - 4} =0 $ #% # (1) evaluated a, b, c of. #% # (2) if there is little in the second quadrant $ P (m, \ frac {1} {2}) $, please quadrilateral represented with the formula containing ABOP of m area. #% # (3) in (2) are satisfied, the existence of the point P, so ABOP quadrangle area is twice the $ △AOP $? If present, the coordinates of the point P is obtained; if not, please explain why #% # <img>.

graph:
{"stem":{"pictures":[{"picturename":"1000020119_Q_1.jpg","coordinates":{"A":"0.00,2.00","B":"3.00,0.00","C":"3.00,4.00","O":"0.00,0.00"},"collineations":{"0":"C###A","1":"C###B","2":"B###A","3":"O###B","4":"A###O"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[{"substemid":"2","questionrelies":"","pictures":[{"picturename":"3.2.3_14.jpg","coordinates":{"P":"-3.00,0.50"},"collineations":{"0":"P###O","1":"P###A"},"variable-equals":{},"circles":[]}],"appliedproblems":{}}]}

NLP: PointRelation: A (0, a), PointRelation: B (b, 0), PointRelation: C (3, c), (ExpressRelation: [key:] a), (ExpressRelation: [key:] b), seek value (size) :(ExpressRelation: [key:] a), evaluation (size) :(ExpressRelation: [key:] b), evaluation (size) :(ExpressRelation: [key:] c), known conditions QuadrilateralRelation {quadrilateral =ABOP}, EqualityRelation {S_ABOP =v_0}, PointInDomRelation [point =P (m, (1/2)), local =SECOND_QUADRANT], the relationship between the expression: DualExpressRelation {expresses =[Express: [v_0], Express: [m]]}, known conditions QuadrilateralRelation {quadrilateral =ABOP}, EqualityRelation {S_ABOP =v_1}, EqualityRelation {S_ △AOP =v_2}, coordinate PointRelation: P, SolutionConclusionRelation {relation =evaluator (size) : (ExpressRelation: [key:] a)}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] b)}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] c)}, {a relationship between the relation =expression: DualExpressRelation {expresses =[Express: [v_0], Express: [m]]} SolutionConclusionRelation}, SolutionConclusionRe lation {relation =coordinates PointRelation: P}

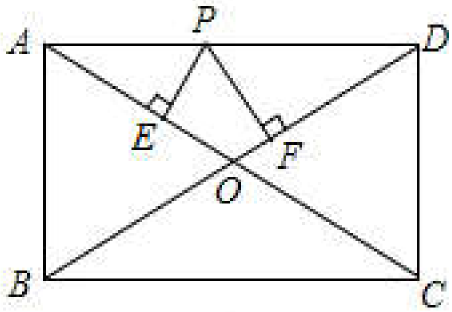
144, topic: As shown in the $ △ABC $, $ ∠ACB =90 ° $, $ ∠ABC =30 ° $, $ BC =2 \ sqrt 3 $, $ to the AC side of the $ $ △ABC $ for external equilateral $ △ACD $, connected $ BD $ #% # (1) find a quadrangle ABCD $ $ area;.?? #% # (2) Determine the BD $ $ long <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000007598_Q_1.jpg","coordinates":{"A":"0.00,0.00","B":"4.00,0.00","C":"0.50,1.94","D":"-1.43,1.40"},"collineations":{"0":"A###C","1":"A###D","2":"D###C","3":"C###B","4":"D###B"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleRelation: △ABC, EqualityRelation {∠ACB =(1/2 * Pi)}, EqualityRelation {∠ABC =(1/6 * Pi)}, EqualityRelation {BC =2 * (3 ^ (1/2)) }, SegmentRelation: BD, known conditions QuadrilateralRelation {quadrilateral =ABCD}, EqualityRelation {S_ABCD =v_0}, evaluation (size) :(ExpressRelation: [key:] v_0), EqualityRelation {BD =v_1}, evaluation (size) :(ExpressRelation: [key:] v_1), SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] S_ABCD)}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] BD)}

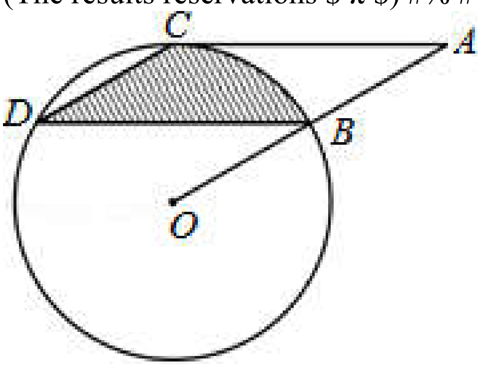
145, topic: As shown in the rectangle ABCD, AB =3, AD =4, P is a fixed point on the AD does not overlap with the A and D, respectively, for a vertical line through point P AC and BD, is a pedal E, F. + PE PF find the value of. #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000050588_Q_1.jpg","coordinates":{"A":"-8.00,6.00","B":"-8.00,3.00","C":"-4.00,3.00","D":"-4.00,6.00","E":"-6.86,5.14","F":"-5.42,4.94","P":"-6.22,6.00","O":"-6.00,4.50"},"collineations":{"0":"A###E###O###C","1":"B###O###F###D","2":"C###B","3":"D###C","4":"A###B","5":"P###E","6":"P###F","7":"A###P###D"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP:
RectangleRelation{rectangle=Rectangle:ABCD},EqualityRelation{AB=3},EqualityRelation{AD=4},PointOnLineRelation{point=P, line=AD, isConstant=false, extension=false},NegativeRelation{relation=PointCoincidenceRelation{point1=P, point2=A}},NegativeRelation{relation=PointCoincidenceRelation{point1=P, point2=D}},LinePerpRelation{line1=PE, line2=AC, crossPoint=E},LinePerpRelation{line1=PF, line2=BD, crossPoint=F},Calculation:(ExpressRelation:[key:]EP+FP),SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]EP+FP)}

146, topic: FIG, point B, C, D are on the ⊙O, cross-over point C as AC∥BD OB extended line at point A, connected to the CD, and ∠CDB =∠OBD =30 °, $ DB =. \ sqrt {3} cm $ #% # (1) Proof: AC is tangent ⊙O;% # # (2) find a string CD, BD and $ \ widehat {BC} $ surrounded by the shaded portion area. (The results reservations $ π $) #% # <img>

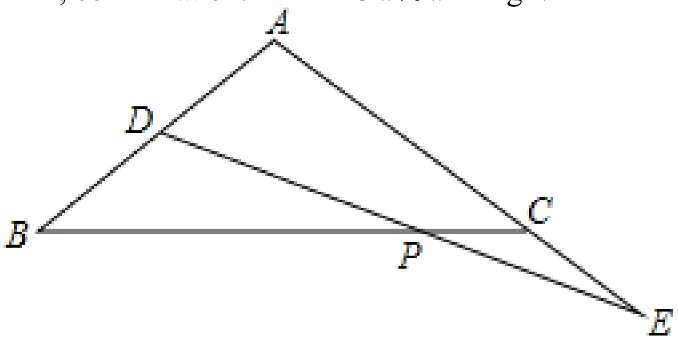


graph:
{"stem":{"pictures":[{"picturename":"1000040845_Q_1.jpg","coordinates":{"A":"3.39,1.96","B":"1.70,0.98","C":"0.00,1.96","D":"-1.70,0.98","O":"0.00,0.00"},"collineations":{"0":"O###B###A","1":"A###C","2":"

C###D","3":"D###B"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"B###C###D"}]}],"appliedproblems":{}},"substems":[]}

NLP: PointOnCircleRelation{circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, points=[B]},PointOnCircleRelation{circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, points=[C]},PointOnCircleRelation{circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, points=[D]},PointOnLineRelation{point=C, line=AC, isConstant=false, extension=false},LineParallelRelation [iLine1=AC, iLine2=BD],LineCrossRelation [crossPoint=Optional.of(A), iLine1=AC, iLine2=OB],SegmentRelation:CD,MultiEqualityRelation [multiExpressCompare=∠BDC=∠DBO=(1/6*Pi), originExpressRelationList=[], keyWord=null, result=null],EqualityRelation{BD=(3^(1/2))},ChordOfCircleRelation{chord=CD, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, chordLength=null,straightLine=null},ProveConclusionRelation:[Proof: LineContactCircleRelation{line=AC, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, contactPoint=Optional.of(C), outpoint=Optional.of(A)}]

147, topic: in △ABC, D is on AB, E AC, on the extension line connecting DE BC at P, BD =CE, DP =EP, confirmation: AB =AC #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000038054_Q_1.jpg","coordinates":{"A":"0.00,2.35","B":"-2.88,0.00","C":"2.88,0.00","D":"-1.60,1.05","E":"4.17,-1.05","P":"1.29,0.00"},"collineations":{"0":"A###D###B","1":"B###P###C","2":"E###C###A","3":"E###P###D"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

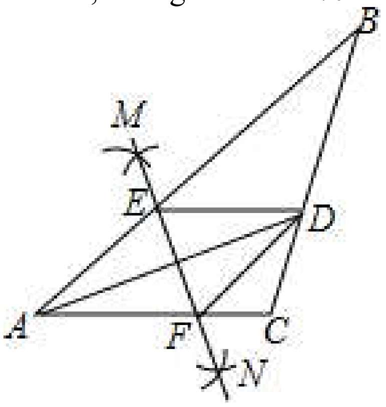
NLP: TriangleRelation:△ABC,PointOnLineRelation{point=D, line=AB, isConstant=false, extension=false},PointOnLineRelation{point=E, line=AC, isConstant=false, extension=true},LineCrossRelation [crossPoint=Optional.of(P), iLine1=DE, iLine2=BC],EqualityRelation{BD=CE},EqualityRelation{DP=EP},ProveConclusionRelation:[Proof: EqualityRelation{AB=AC}]

148, topic: (1) shown in Figure 1, the rectangle ABCD, $ \ angle A =\ angle B =\ angle C =\ angle D =90 {} ^ \ circ $, $ AB =CD $, $ AD =BC $ and $ \ sqrt {AB-4} + | AD-6 | =0 $, the point $ P $, $ Q $ are side the AD, fixed point on AB seeking BD long;. #% # (2) 2, the $ P $, $ Q $ whether motion can $ \ vartriangle CPQ $ become right isosceles triangle if, the length of the PA request;? if not, please reasons; #% # (3) 3, take a little on the BC $ E $, so $ EC =5 $, then when $ \ vartriangle EPC $ is an isosceles triangle, the determined long PA. #% # <img>

graph:

NLP: EqualityRelation{BD=v_0},(ExpressRelation:[key:]1),RectangleRelation{rectangle=Rectangle:ABCD},MultiEqualityRelation [multiExpressCompare=∠A=∠B=∠C=∠D=(1/2*Pi), originExpressRelationList=[], keyWord=null, result=null],EqualityRelation{AB=CD},EqualityRelation{AD=BC},EqualityRelation{((AB-4)^(1/2))+abs(AD-6)=0},PointOnLineRelation{point=P, line=AD, isConstant=false, extension=false},PointOnLineRelation{point=Q, line=AB, isConstant=false, extension=false},Calculation:(ExpressRelation:[key:]v_0),EqualityRelation{AP=v_1},(ExpressRelation:[key:]2),PointRelation:P,Calculation:(ExpressRelation:[key:]v_1),EqualityRelation{AP=v_2},(ExpressRelation:[key:]3),PointOnLineRelation{point=E, line=BC, isConstant=false, extension=false},EqualityRelation{CE=5},IsoscelesTriangleRelation:IsoscelesTriangle:△EPC[Optional.absent()],Calculation:(ExpressRelation:[key:]v_2),SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]BD)},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]AP)},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]AP)}

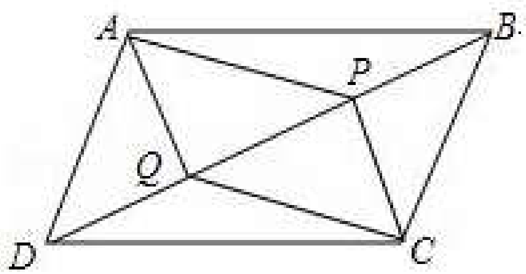
149, topic: As shown in the △ABC, the AD equally ∠BAC, plotted as follows: The first step, each point A, D as the center, greater than $ \ frac {1} {2} AD $ of in both AD as long as the radius of the arc intersect at points M, N; the second step, each MN connecting cross AB, AC at points E, F; a third step, the connection DE, DF #% # (1). Proof: a diamond quadrangular AEDF;% # # (2) when the BD =6, AF =4, CD =3, a long seek bE #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000081309_Q_1.jpg","coordinates":{"A":"2.25,5.10","B":"10.50,13.81","C":"8.25,5.10","D":"9.00,8.00","E":"5.00,8.00","F":"6.25,5.10","M":"4.16,9.95","N":"7.09,3.15"},"collineations":{"0":"A###E###B","1":"A###F###C","2":"A###D","3":"B###D###C","4":"E###D","5":"M###E###F###N","6":"D###F"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleRelation:△ABC,AngleBisectorRelation{line=AD,angle=∠EAF, angle1=∠DAE, angle2=∠DAF},LineCrossRelation [crossPoint=Optional.of(E), iLine1=MN, iLine2=AB],LineCrossRelation [crossPoint=Optional.of(F), iLine1=MN, iLine2=AC],SegmentRelation:DE,SegmentRelation:DF,EqualityRelation{BE=v_0},EqualityRelation{BD=6},EqualityRelation{AF=4},EqualityRelation{CD=3},Calculation:(ExpressRelation:[key:]v_0),ProveConclusionRelation:[Proof: RhombusRelation{rhombus=Rhombus:AEDF}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]BE)}

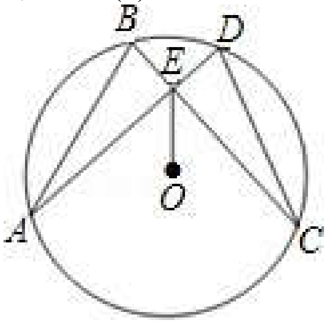
150, topic: as shown in the parallelogram ABCD, P, Q are two points on a diagonal line of the BD, and BP =DQ #% # confirmation: APCQ quadrilateral parallelogram #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000041537_Q_1.jpg","coordinates":{"A":"1.14,2.35","B":"5.37,2.35","C":"4.23,0.00","D":"0.00,0.00","P":"3.82,1.67","Q":"1.56,0.68"},"collineations":{"0":"A###B","1":"B###C","2":"C###D","3":"D###A","4":"B###P###Q###D","5":"A###P","6":"A###Q","7":"C###P","8":"C###Q"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: ParallelogramRelation{parallelogram=Parallelogram:ABCD},PointOnLineRelation{point=P, line=BD, isConstant=false, extension=false},PointOnLineRelation{point=Q, line=BD, isConstant=false, extension=false},EqualityRelation{BP=DQ},ProveConclusionRelation:[Proof: ParallelogramRelation{parallelogram=Parallelogram:APCQ}]

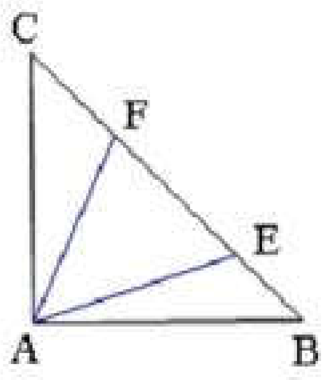
151, topic: As shown in the $ $ ⊙O, AD, BC at point E, OE bisects $ ∠AEC $ (1) Prove:. $ AB =CD $; #% # (2) if $ ⊙O radius of $ 5, $ AD⊥CB $, $ DE =1 $, AD long seeking.



graph:
{"stem":{"pictures":[{"picturename":"1000025139.jpg","coordinates":{"A":"-4.95,-0.71","B":"-0.71,4.95","C":"4.95,-0.71","D":"0.71,4.95","E":"0.00,4.24","O":"0.00,0.00"},"collineations":{"0":"E###B###C","1":"A###B","2":"C###D","3":"A###D###E","4":"O###E"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"B###A###C###D"}]}],"appliedproblems":{}},"substems":[]}

NLP: CircleRelation{circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}},LineCrossRelation [crossPoint=Optional.of(E), iLine1=AD, iLine2=BC],AngleBisectorRelation{line=OE,angle=∠AEC, angle1=∠AEO, angle2=∠CEO},EqualityRelation{AD=v_0},RadiusRelation{radius=null, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, length=Express:[5]},LinePerpRelation{line1=AD, line2=CB, crossPoint=E},EqualityRelation{DE=1},Calculation:(ExpressRelation:[key:]v_0),ProveConclusionRelation:[Proof: EqualityRelation{AB=CD}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]AD)}

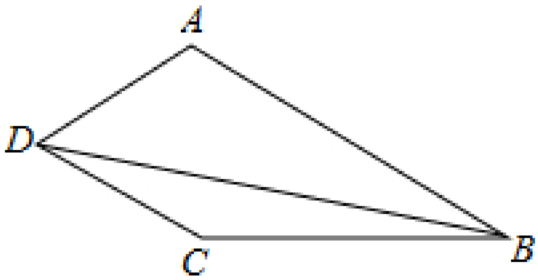
152, topic: as shown in the right-angled isosceles $ △ABC $ hypotenuse take different from B, C of the two points E, F, so $ ∠EAF =45 ° $, Proof: the EF, BE, CF of side of triangle is a right triangle.



graph:
{"stem":{"pictures":[{"picturename":"1000026796_Q_1.jpg","coordinates":{"A":"0.00,0.00","B":"8.00,0.00","C":"0.00,8.00","E":"6.40,1.60","F":"3.00,5.00"},"collineations":{"0":"A###B","1":"A###C","2":"C###E###F###B","3":"A###F","4":"A###E"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: EqualityRelation {∠EAF =(1/4 * Pi)}, ProveConclusionRelation: [Proof: SegmentRelation: EF], ProveConclusionRelation: [Proof: SegmentRelation: BE]

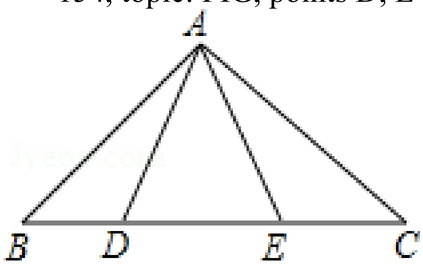
153, topic: Given: As shown, the quadrangle ABCD, ∠ADC =60 °, ∠ABC =30 °, AD =CD Proof: $ {{BD} ^ {2}} ={{AB} ^ {2 }} + {{BC} ^ {2}} $. #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000070813_Q_1.jpg","coordinates":{"A":"3.15,4.07","B":"6.16,2.86","C":"2.97,2.44","D":"1.64,3.41"},"collineations":{"0":"A###D","1":"D###C","2":"C###B","3":"A###B","4":"D###B"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: known conditions QuadrilateralRelation {quadrilateral =ABCD}, EqualityRelation {∠ADC =(1/3 * Pi)}, EqualityRelation {∠ABC =(1/6 * Pi)}, EqualityRelation {AD =CD}, ProveConclusionRelation: [demonstrate: EqualityRelation {((BD) ^ 2) =((AB) ^ 2) + ((BC) ^ 2)}]

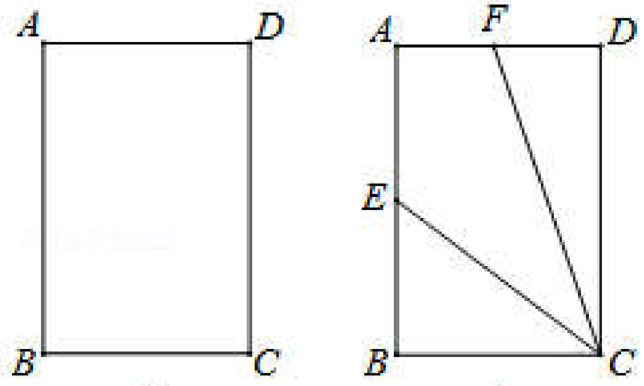
154, topic: FIG, points D, E in the edge BC of △ABC, AB =AC, AD =AE Proof: BD =CE #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000035553_Q_1.jpg","coordinates":{"A":"-5.00,7.00","B":"-7.00,5.00","C":"-3.00,5.00","D":"-6.00,5.00","E":"-4.00,5.00"},"collineations":{"0":"B###D###E###C","1":"A###B","2":"A###D","3":"A###E","4":"A###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: PointRelation:D,TriangleRelation:△ABC,PointOnLineRelation{point=E, line=BC, isConstant=false, extension=false},EqualityRelation{AB=AC},EqualityRelation{AD=AE},ProveConclusionRelation:[Proof: EqualityRelation{BD=CE}]

155, topic: FIG known AB∥CD, AB =CD, ∠A =∠D #% # (1) Proof: quadrangle ABCD is rectangular; #% # (2) E is the midpoint of side AB, AD F is the edge point, ∠DFC =2∠BCE #% # i) shown in FIG ②, if F is the midpoint of AD, DF =1.6, CF seek length;. #% # ii) in FIG ②, if CE =4, CF =5, the AF + BC =_____, AF =_____. #% # <img>

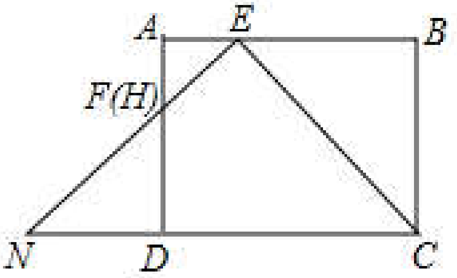


① ②

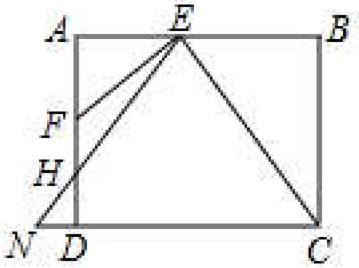
graph:
{"stem":{"pictures":[],"appliedproblems":{}},"substems":[{"substemid":"1","questionrelies":"","pictures":[{"picturename":"1000040727_Q_1.jpg","coordinates":{"A":"0.00,4.00","B":"0.00,0.00","C":"2.49,0.00","D":"2.49,4.00"},"collineations":{"0":"A###B","1":"B###C","2":"C###D","3":"D###A"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},{"substemid":"2","questionrelies":"","pictures":[{"picturename":"1000040727_Q_1.jpg","coordinates":{"A":"0.00,4.00","B":"0.00,0.00","C":"2.49,0.00","D":"2.49,4.00","E":"0.00,2.00","F":"1.24,4.00"},"collineations":{"0":"A###E###B","1":"B###C","2":"C###D","3":"D###F###A","4":"C###F","5":"C###E"},"variable-equals":{},"circles":[]}],"appliedproblems":{}}]}

NLP: LineParallelRelation [iLine1 =AB, iLine2 =CD], EqualityRelation {AB =CD}, EqualityRelation {∠BAD =∠ADC}, EqualityRelation {CF =v_0}, MiddlePointOfSegmentRelation {middlePoint =E, segment =AB}, PointOnLineRelation {point =F, line =AD, isConstant =false, extension =false}, EqualityRelation {∠DFC =2 * ∠BCE}, EqualityRelation {DF =1.6}, EqualityRelation {CF =5}, evaluation (size) :(ExpressRelation: [key:] v_0), evaluation (size) :(ExpressRelation: [key:] AF + BC), evaluation (size) :(ExpressRelation: [key:] AF), ProveConclusionRelation: [Proof: RectangleRelation {rectangle =Rectangle: ABCD}], SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] CF)}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] AF + BC)}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] AF)}

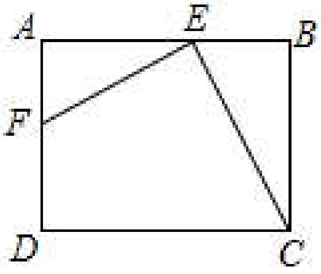
156, topic: As shown in the rectangle ABCD, AB =4, BC =3, E is the edge point AB, EF⊥CE cross AD at point F., Over the point E as ∠AEH =∠BEC, in cross-ray FD when point H, at a cross point of FIG ray CD N #% # (1), when the point F coincides with point H, a long seek BE; #% # (2) in FIG. B, point H when the segment FD the upper, provided BE =x, DN =y, find the functional relationship between y and x, and write it in the range of the argument; #% # (3) connected to AC, and when △FHE similar △AEC when seeking a long line DN. #% # <img>



图a



图b



图c

graph:
{"stem":{"pictures":[],"appliedproblems":{}},"substems":[{"substemid":"1","questionrelies":"","pictures":[{"picturename":"1000060689_Q_1.jpg","coordinates":{"A":"0.00,3.00","B":"4.00,3.00","C":"4.00,0.00","D":"0.00,0.00","E":"1.00,3.00","F":"0.00,2.00","H":"0.00,2.00","N":"-2.00,0.00"},"collineations":{"0":"A###F###D","6":"A###H###D","1":"B###A###E","2":"N###F###E","7":"N###H###E","3":"N###D###C","4":"E###C","5":"B###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},{"substemid":"2","questionrelies":"","pictures":[{"picturename":"1000060689_Q_1.jpg","coordinates":{"A":"0.00,-2.00","B":"4.00,-2.00","C":"4.00,-5.00","D":"0.00,-5.00","H":"0.00,-3.91","F":"0.00,-3.31","E":"1.75,-2.00","N":"-1.00,-5.00"},"collineations":{"0":"A###F###D###H","1":"N###H###E","2":"N###D###C","3":"A###E###B","4":"F###E","5":"E###C","6":"B###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}}]}

NLP:
RectangleRelation{rectangle=Rectangle:ABCD},EqualityRelation{AB=4},EqualityRelation{BC=3},PointOnLineRelation{point=E, line=AB, isConstant=false, extension=false},LinePerpRelation{line1=EF, line2=CE, crossPoint=E},LineCrossRelation [crossPoint=Optional.of(F), iLine1=EF, iLine2=AD],EqualityRelation{∠AEH=∠BEC},LineCrossRelation [crossPoint=Optional.of(H), iLine1=EF, iLine2=FD],LineCrossRelation [crossPoint=Optional.of(N), iLine1=EF, iLine2=CD],EqualityRelation{BE=v_0},(ExpressRelation:[key:]a),PointCoincidenceRelation{point1=H, point2=F},Calculation:(ExpressRelation:[key:]v_0),(ExpressRelation:[key:]b),PointOnLineRelation{point=H, line=FD, isConstant=false, extension=false},EqualityRelation{BE=x},EqualityRelation{DN=y},DualExpressRelation:DualExpressRelation{expresses=[Express:[y], Express:[x]]},EqualityRelation{DN=v_1},SegmentRelation:AC,TriangleSimilarRelation{triangleA=△FHE, triangleB=△AEC},Calculation:(ExpressRelation:[key:]v_1),SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]BE)},SolutionConclusionRelation{relation=DualExpressRelation:DualExpressRelation{expresses=[Express:[y], Express:[x]]}},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]DN)}

157, topic: known $ ∠MAN $, AC bisecting $ ∠MAN $ #% # (1) in FIG. 1, when the $ ∠MAN =120 ° $, $ ∠ABC =∠ADC =90 ° $,.? Proof: $ AB + AD =AC $ #% # (2) in FIG. 2, when the $ ∠MAN =120 ° $, $ ∠ABC + ∠ADC =180 ° $, then (1) is still in the conclusions.? founded? If established, please give proof; if not established, please explain the reason <img><img>.

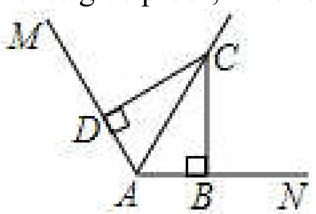
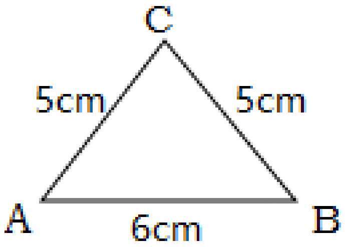


图1

graph:
{"stem":{"pictures":[{"picturename":"1000021304_Q_1.jpg","coordinates":{"A":"0.00,0.00","B":"0.92,0.00","C":"0.92,1.60","D":"-0.46,0.80","M":"-1.00,1.73","N":"2.46,0.00"},"collineations":{"0":"M###A###D","1":"C###A","2":"C###D","3":"C###B","4":"A###B###N"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[{"substemid":"2","questionrelies":"","pictures":[{"picturename":"1000021304_Q_2.jpg","coordinates":{"B":"1.36,0.00","D":"-0.25,0.43"},"collineations":{"0":"A###M###D","1":"C###B"},"variable-equals":{},"circles":[]}],"appliedproblems":{}}]}

NLP: AngleRelation{angle=∠BAD},AngleBisectorRelation{line=AC,angle=∠BAD, angle1=∠BAC, angle2=∠CAD},(ExpressRelation:[key:]1),EqualityRelation{∠BAD=(2/3*Pi)},MultiEqualityRelation [multiExpressCompare=∠ABC=∠ADC=(1/2*Pi), originExpressRelationList=[], keyWord=null, result=null],(ExpressRelation:[key:]2),EqualityRelation{∠BAD=(2/3*Pi)},EqualityRelation{∠ABC+∠ADC=(Pi)},ProveConclusionRelation:[Proof: EqualityRelation{AB+AD=AC}]

158, topic: FIG, find the area of the isosceles triangle ABC #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000072771_Q_1.jpg","coordinates":{"A":"0.00,0.00","B":"6.00,0.00","C":"3.00,4.00"},"collineations":{"0":"B###A","1":"B###C","2":"C###A"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: EqualityRelation {S_ △ABC =v_0}, evaluation (size) :(ExpressRelation: [key:] v_0), SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] S_ △ABC)}

159, topic: 1, $ quadrangle ABCD is rectangular $, $ P $ a $ $ edge of the BC point connection $ PA $, $ PD $ (1) Proof: $ {{PA} ^ {2}} + {{PC} ^ {2}} ={{PB} ^ {2}} + {{PD} ^ {2}} $ #% # (2) in FIG. 2, when the point $ A $ $ rectangular ABCD internal $, the connection PA, PB, PC, PD. the above conclusions are also set? reasons. #% # (3) when the point $ P $ in the outer rectangle $ ABCD $, the connection PA, PB, PC , PD. the above conclusions are also set? (without cause)

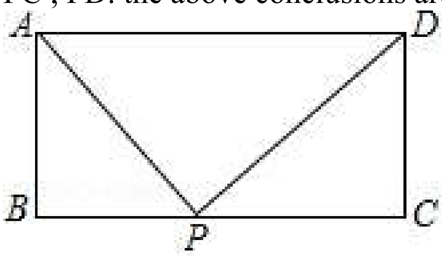


图1

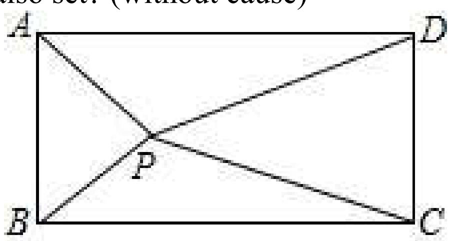


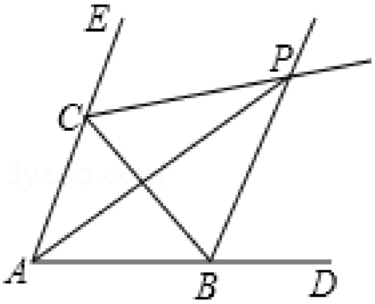
图2

graph:
{"stem":{"pictures":[{"picturename":"1000027627_Q_1.jpg","coordinates":{"A":"0.00,3.00","B":"0.00,0.00","C":"6.00,0.00","D":"6.00,3.00"},"collineations":{"0":"B###A","1":"A###D","2":"D###C","3":"B###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[{"substemid":"1","questionrelies":"","pictures":[{"picturename":"1000027627_Q_1.jpg","coordinates":{"P":"3.00,0.00"},"collineations":{"0":"B

###P###C","1":"D###P","2":"A###P"},"variable-equals":{},"circles":[]}],"appliedproblems":{}}]}

NLP: RectangleRelation{rectangle=Rectangle:ABCD},PointOnLineRelation{point=P, line=BC, isConstant=false, extension=false},SegmentRelation:PA,SegmentRelation:PD,(ExpressRelation:[key:]2),PositionOfPoint2RegionRelation{point=A, region=EnclosedRegionRelation{name=ABCD, closedShape=Rectangle:ABCD}, position=inner},MultiPointCollinearRelation:[P, A],MultiPointCollinearRelation:[P, B],MultiPointCollinearRelation:[P, C],MultiPointCollinearRelation:[P, D],MultiPointCollinearRelation:[P, A],MultiPointCollinearRelation:[P, B],MultiPointCollinearRelation:[P, C],MultiPointCollinearRelation:[P, D],ProveConclusionRelation:[Proof: EqualityRelation{((AP)^2)+((CP)^2)=((BP)^2)+((DP)^2)}]

160, topic: As shown in the △ABC, ∠BAC =80 °, the point P is the exterior angle of △ABC ∠DBC, ∠BCE intersection of bisectors of the AP is connected, the required degree ∠DAP #% # <img. >



graph:
{"stem":{"pictures":[{"picturename":"47A7A07BF7EF416EBF3576556B3BB14F.jpg","coordinates":{"A":"-14.00,3.00","B":"-10.00,3.00","C":"-13.49,5.92","D":"-8.00,3.00","E":"-13.05,8.39","P":"-8.24,7.83"},"collineations":{"0":"C###A###E","1":"A###B###D","2":"A###P","3":"C###B","4":"B###P","5":"C###P"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: AngleBisectorRelation {line =CP, angle =∠BCE, angle1 =∠BCP, angle2 =∠ECP}, TriangleRelation: △ABC, EqualityRelation {∠BAC =(4/9 * Pi)}, SegmentRelation: AP, seeking angle size: AngleRelation {angle =∠BAP}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] ∠BAP)}

161, topic: as shown, is known as E is the edge length of the square ABCD diagonal line BD 1 is a fixed point, point E (with B, D do not overlap) from point B to point D motion, as point E over straight GH∥BC, cross AB at point G, CD cross at point H, EF⊥AE at point E, cross-CD (or CD extended line) at point F. #% # (1) in FIG. 1, confirmation △AGE ≌ △EHF:; #% # (2) during the movement of the point E (FIG. 2), whether the area of the quadrilateral changes AFHG justify #% # <img>?.

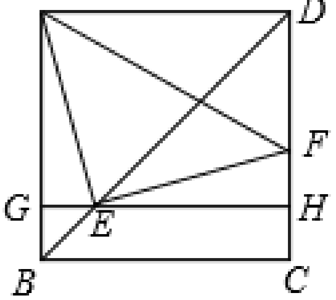


图 1

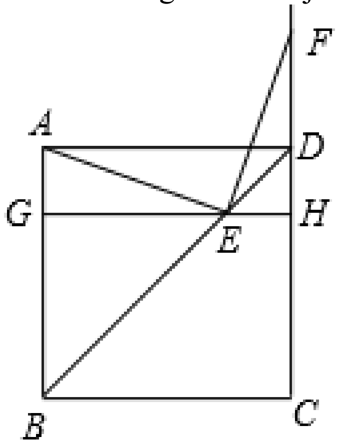


图 2

graph:
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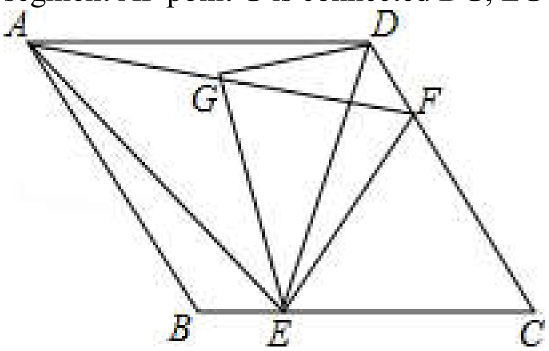
NLP: PointOnLineRelation{point=E, line=GH, isConstant=false, extension=false},PointRelation:B,SegmentRelation:CD,NegativeRelation{relation=PointRelation:D},SquareRelation{square=Square:ABCD, length=1},PointOnLineRelation{point=E, line=BD, isConstant=false, extension=false},PointOnLineRelation{point=E, line=BD, isConstant=false, extension=false},LineParallelRelation [iLine1=GH, iLine2=BC],LineCrossRelation [crossPoint=Optional.of(G), iLine1=GH, iLine2=AB],LineCrossRelation [crossPoint=Optional.of(H), iLine1=GH, iLine2=CD],LinePerpRelation{line1=EF, line2=AE, crossPoint=E},LineCrossRelation [crossPoint=Optional.of(F), iLine1=EF, iLine2=CD],(ExpressRelation:[key:]1),Know:QuadrilateralRelation{quadrilateral=AFHG},EqualityRelation{S_AFHG=v_0},(ExpressRelation:[key:]1),(ExpressRelation:[key:]2),ProveConclusionRelation:[Proof: TriangleCongRelation{triangleA=△AGE, triangleB=△EHF}]

162, topic: FIG, at diamond ABCD, the points E, F are the BC, that is connected DE, EF a CD, and AE =AF, ∠DAE =∠BAF #% # (1) Prove:. CE =CF; #% # (2) when the ∠ABC =120 °, the midpoint of a line segment AF point G is connected DG, EG Proof: DG⊥GE #% # <img>..

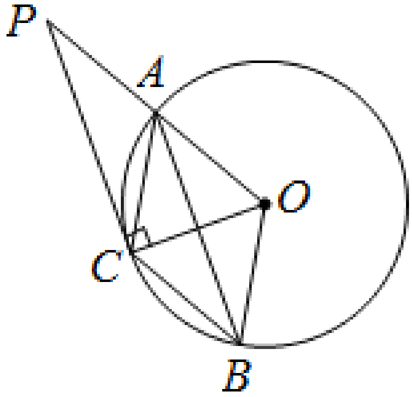


graph:
{"stem":{"pictures":[{"picturename":"1000041840_Q_1.jpg","coordinates":{"A":"-1.81,3.14","B":"0.00,0.00","C":"3.62,0.00","D":"1.81,3.14","E":"1.00,0.00","F":"2.31,2.27","G":"0.25,2.71"},"collineations":{"0":"A###B","1":"B###E###C","2":"C###F###D","3":"D###A","4":"A###E","5":"A###G###F","6":"G###E","7":"G###D","8":"D###E","9":"E###F"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: RhombusRelation{rhombus=Rhombus:ABCD},PointOnLineRelation{point=E, line=BC, isConstant=false, extension=false},PointOnLineRelation{point=F, line=CD, isConstant=false, extension=false},SegmentRelation:DE,SegmentRelation:EF,EqualityRelation{AE=AF},EqualityRelation{∠DAE=∠BAG},EqualityRelation{∠ABE=(2/3*Pi)},MiddlePointOfSegmentRelation{middlePoint=G,segment=AF},SegmentRelation:DG,SegmentRelation:EG,ProveConclusionRelation:[Proof: EqualityRelation{CE=CF}],ProveConclusionRelation:[Proof: LinePerpRelation{line1=DG, line2=GE,

crossPoint=G}]

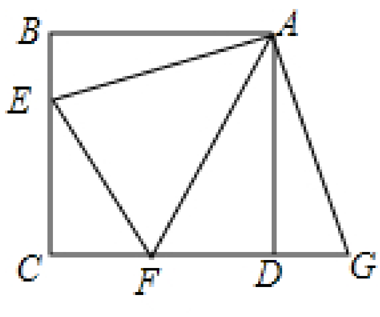
163, topic: FIG., A, B are points on the circle O, ∠AOB =120 °, the point C is the midpoint of the arc AB #% # (1) Prove:. AB bisecting ∠OAC; #% # (2) extended to the point P such that OA OA =AP, PC connection, if the O circle radius R =1, the PC seeking long. #% # <img>



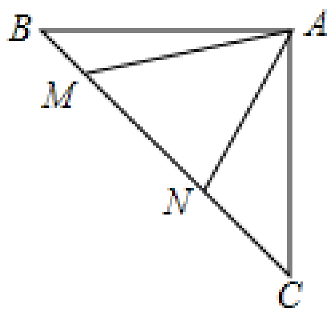
graph:
{"stem":{"pictures":[{"picturename":"1000060709_Q_1.jpg","coordinates":{"A":"3.46,2.00","B":"-3.46,2.00","C":"0.00,4.00","D":"0.00,2.00","O":"0.00,0.00"},"collineations":{"0":"O###C###D","1":"B###A###D","2":"A###C","3":"B###C","4":"O###A","5":"O###B"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"C###B###A"}]}],"appliedproblems":{}},"substems":[{"substemid":"2","questionrelies":"","pictures":[{"picturename":"1000060709_Q_1.jpg","coordinates":{"P":"6.93,4.00"},"collineations":{"0":"P###C","1":"P###A###O"},"variable-equals":{},"circles":[]}],"appliedproblems":{}}]}

NLP: PointOnCircleRelation{circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, points=[A, B]},EqualityRelation{∠AOB=(2/3*Pi)},MiddlePointOfArcRelation:C/type:MAJOR_ARC⌒AB,EqualityRelation{CP=v_0},PointOnLineRelation{point=P, line=OA, isConstant=false, extension=true},EqualityRelation{AO=AP},SegmentRelation:PC,RadiusRelation{radius=null, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, length=Express:[1]},Calculation:(ExpressRelation:[key:]v_0),ProveConclusionRelation:[Proof: AngleBisectorRelation{line=AB,angle=∠CAO, angle1=∠BAC, angle2=∠BAO}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]CP)}

164, topic: (1) shown in (1), in the square ABCD, it is known points E, F, respectively, on the side BC, CD, ∠EAF =45 °, the extension CD point G, so that DG =BE, coupling . EF, AG Proof: #% # ① ∠BEA =∠G; #% # ② EF =FG #% # (2) shown in (2), the isosceles right triangle ABC is known ∠BAC =90 °, AB =AC, the point M, N on the side BC, and ∠MAN =45 °. If the BM =1, CN =3, the MN rectification. #% # <img>



(1)

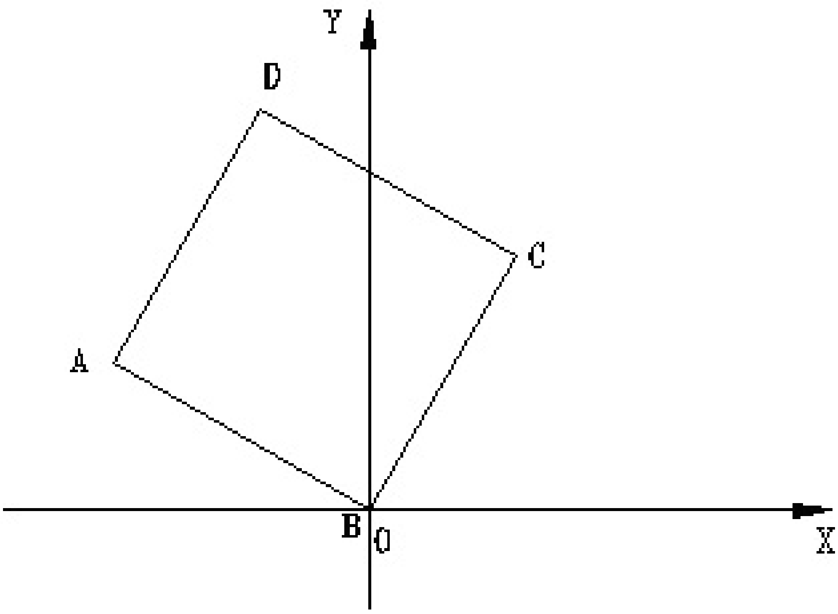


(2)

graph:
{"stem":{"pictures":[],"appliedproblems":{}},"substems":[{"substemid":"1","questionrelies":"","pictures":[{"picturename":"1000036928_Q_1.jpg","coordinates":{"A":"-6.00,5.00","B":"-9.00,5.00","C":"-9.00,2.00","D":"-6.00,2.00","E":"-9.00,4.00","F":"-7.50,2.00","G":"-5.00,2.00"},"collineations":{"0":"B###E###C","1":"C###F###D###G","2":"A###D","3":"A###B","4":"A###G","5":"A###E","6":"A###F","7":"E###F"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},{"substemid":"2","questionrelies":"","pictures":[{"picturename":"1000036928_Q_1.jpg","coordinates":{"A":"-6.00,5.00","B":"-9.00,5.00","C":"-6.00,2.00","M":"-8.59,4.59","N":"-7.26,3.26"},"collineations":{"0":"B###A","1":"A###M","2":"A###N","3":"A###C","4":"B###M###N###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}}]}

NLP: SquareRelation{square=Square:ABCD},PointOnLineRelation{point=E, line=BC, isConstant=false, extension=false},PointOnLineRelation{point=F, line=CD, isConstant=false, extension=false},EqualityRelation{∠EAF=(1/4*Pi)},PointOnLineRelation{point=G, line=CD, isConstant=false, extension=true},EqualityRelation{DG=BE},SegmentRelation:EF,SegmentRelation:AG,SubStemReliedRelation{selfDivideId=-1, reliedDivideId=1},EqualityRelation{∠AEB=∠AGD},SubStemReliedRelation{selfDivideId=-1, reliedDivideId=1},EqualityRelation{EF=FG},EqualityRelation{MN=v_0},IsoscelesRightTriangleRelation:IsoscelesRightTriangle:IsoscelesTriangle:△ABC[Optional.of(B)][Optional.of(B)],EqualityRelation{∠BAC=(1/2*Pi)},EqualityRelation{AB=AC},PointOnLineRelation{point=M, line=BC, isConstant=false, extension=false},PointOnLineRelation{point=N, line=BC, isConstant=false, extension=false},EqualityRelation{∠MAN=(1/4*Pi)},EqualityRelation{BM=1},EqualityRelation{CN=3},Calculation:(ExpressRelation:[key:]v_0),SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]MN)}

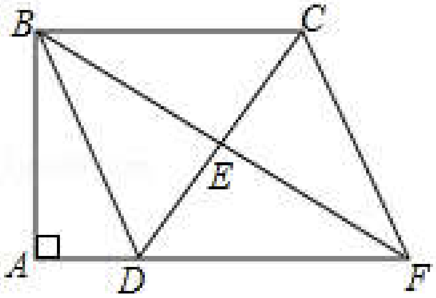
165, topic: FIG known, a square of ABCD 2, and point B at the origin, A, D points in the second quadrant, x AB and the negative axle shaft angle is $ {30 ^ \ circ} $, seeking C, D coordinates of the two points.



graph:
{"stem":{"pictures":[{"picturename":"1000000962_Q_1.jpg","coordinates":{"A":"-1.73,1.00","D":"-0.73,2.73","C":"1.00,1.73","B":"0.00,0.00"},"collineations":{"0":"B###A","1":"B###C","2":"A###D","3":"C###D"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: SquareRelation{square=Square:ABCD, length=2},PointRelation:B(0,0),PointInDomRelation [point=A, local=SECOND_QUADRANT],PointInDomRelation [point=D, local=SECOND_QUADRANT],Coordinate:PointRelation:C,Coordinate:PointRelation:D,SolutionConclusionRelation{relation=Coordinate:PointRelation:C},SolutionConclusionRelation{relation=Coordinate:PointRelation:D}

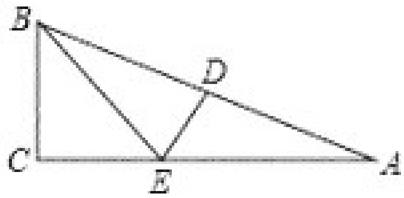
166, topic: As shown, the quadrangle ABCD, $\angle A = \angle ABC = 90°$, AD =10cm, BC =30cm, E is the midpoint of the side CD, and BE is connected with the extension line of AD extension at point F. % # # (1) Proof: BDFC quadrilateral is a parallelogram;% # # (2) If $\triangle BCD$ is an isosceles triangle, quadrilateral BDFC seeking area #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"A1AEFF80AD0F4B48860835EBD0452987.jpg","coordinates":{"A":"-14.00,3.00","B":"-14.00,5.80","C":"-11.00,5.80","D":"-13.00,3.00","E":"-12.00,4.40","F":"-10.00,3.00"},"collineations":{"0":"B###A","1":"A###D###F","2":"B###F###E","3":"B###C","4":"B###D","5":"D###E###C","6":"C###F"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[{"substemid":"2","questionrelies":"1","pictures":[],"appliedproblems":{}}]}

NLP: Know:QuadrilateralRelation{quadrilateral=ABCD},MultiEqualityRelation [multiExpressCompare=∠BAD=∠ABC=(1/2*Pi), originExpressRelationList=[], keyWord=null, result=null],EqualityRelation{AD=10},EqualityRelation{BC=30},MiddlePointOfSegmentRelation{middlePoint=E,segment=CD},LineCrossRelation [crossPoint=Optional.of(F), iLine1=BE, iLine2=AD],Know:QuadrilateralRelation{quadrilateral=BCFD},EqualityRelation{S_BCFD=v_0},IsoscelesTriangleRelation:IsoscelesTriangle:△BCD[Optional.of(B)],Calculation:(ExpressRelation:[key:]v_0),ProveConclusionRelation:[Proof: ParallelogramRelation{parallelogram=Parallelogram:BCFD}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]S_BCFD)}

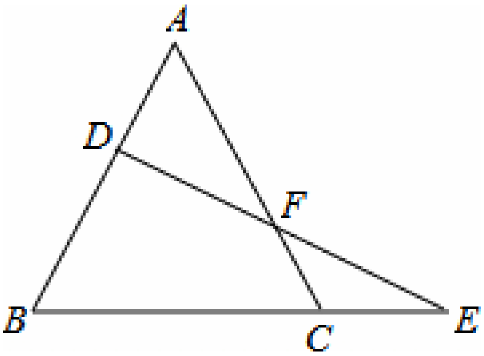
167, topic: FIG, $ Rt \ vartriangle ABC $ in, $ \ angle ACB =90 ^ \ circ $, $ AC =12 $, $ BC =5 $, D $ is the fixed point of the edge AB $, $ is a fixed point E $ $ $ edge of the AC, the minimum value is bE + ED $ $



graph:
{"stem":{"pictures":[{"picturename":"1000027620_Q_1.jpg","coordinates":{"A":"12.00,0.00","B":"0.00,5.00","C":"0.00,0.00","D":"3.55,3.52","E":"2.08,0.00"},"collineations":{"0":"B###D###A","1":"A###E###C","2":"B###C","3":"B###E","4":"D###E"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: ExtremumRelation [key=Express:[BE+DE], value=Express:[v_0], extremumType=MIN],RightTriangleRelation:RightTriangle:△ABC[Optional.of(C)],EqualityRelation{∠BCE=(1/2*Pi)},EqualityRelation{AC=12},EqualityRelation{BC=5},PointOnLineRelation{point=D, line=AB, isConstant=false, extension=false},PointOnLineRelation{point=E, line=AC, isConstant=false, extension=false},(ExpressRelation:[key:]v_0)

168, topic: FIG, point D on the side of the equilateral triangle AB ABC, the point F on the side AC, DF and extend cross-connecting an extension line BC at point E, EF =FD Proof:. AD =CE # % # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000030963_Q_1.jpg","coordinates":{"A":"-9.00,8.46","B":"-11.00,5.00","C":"-7.00,5.00","D":"-9.65,7.34","E":"-5.71,5.00","F":"-7.68,6.17"},"collineations":{"0":"B###C###E","1":"A###D###B","2":"A###F###C","3":"D###F###E"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: RegularTriangleRelation:RegularTriangle:△ABC,PointOnLineRelation{point=D, line=AB, isConstant=false, extension=false},PointOnLineRelation{point=F, line=AC, isConstant=false, extension=false},LineCrossRelation [crossPoint=Optional.of(E), iLine1=DF, iLine2=BC],EqualityRelation{EF=DF},ProveConclusionRelation:[Proof: EqualityRelation{AD=CE}]

169, topic: FIG 1, $ \ odot O $ a $ △ABC $ circumcircle, AB is the diameter, $ OD∥AC $, and $ ∠CBD =∠BAC $, OD pay $ \ odot O $ at point E.?#%#(1) Proof: BD is $ \ odot O $ tangent; #% # (2) If the point E is the midpoint of a line segment OD prove:? to O, a, C, E to vertex a diamond quadrangular;? #% # (3) to a point as $ CF⊥AB $ F., cross-connections AD CF at point G (FIG. 2), seeking $ \ frac {FG} {FC} $ value.

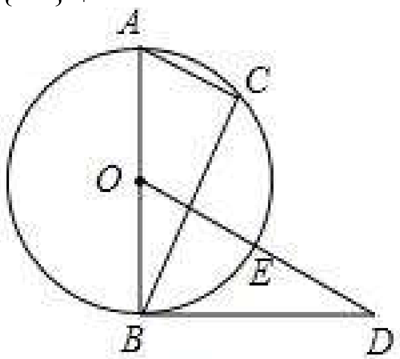


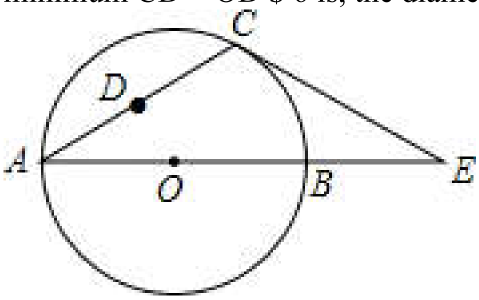
图1

graph:
{"stem":{"pictures":[{"picturename":"5452947ECE9848858CF7E4F6652F3BED.jpg","coordinates":{"A":"-11.00,9.00","B":"-11.00,1.00","C":"-7.54,7.00","D":"-4.07,1.00","E":"-7.54,3.00","F":"-11.00,7.00","G":"-

9.27,7.00","O":"-11.00,5.00"},"collineations":{"0":"B###A###O###F","1":"A###C","2":"A###G###D","3":"A###F###C","4":"B###D","5":"B###C","6":"G###F###C","7":"O###E###D"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"C###A###B###E"}]}],"appliedproblems":{}},"substems":[{"substemid":"2","questionrelies":"1","pictures":[],"appliedproblems":{}},{"substemid":"3","questionrelies":"1","pictures":[],"appliedproblems":{}}]}

NLP: InscribedShapeOfCircleRelation{closedShape=△ABC, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}},DiameterRelation{diameter=AB, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, length=null},LineParallelRelation [iLine1=OD, iLine2=AC],EqualityRelation{∠CBD=∠CAF},LineCrossCircleRelation{line=OD, circle=⊙O, crossPoints=[E], crossPointNum=1},MiddlePointOfSegmentRelation{middlePoint=E,segment=OD},LinePerpRelation{line1=CF, line2=AB, crossPoint=F},LineCrossRelation [crossPoint=Optional.of(G2), iLine1=AD, iLine2=CF],Calculation:(ExpressRelation:[key:]((FG)/(CF))),ProveConclusionRelation:[Proof: LineContactCircleRelation{line=BD, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, contactPoint=Optional.of(B), outpoint=Optional.of(D)}],ProveConclusionRelation:[Proof: CircleRelation{circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}}],ProveConclusionRelation:[PointRelation:A],ProveConclusionRelation:[PointRelation:C],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]((FG)/(CF)))}

170, topic: As shown in the △ACE, CA =CE, ∠CAE =30 °, ⊙O through points C, the diameter of a circle AB and the line segment AE #% # (1) Explain CE is ⊙O. tangent;% # # (2) when the high edge of △AE ACE is h, h, containing algebraic trial represents the diameter of the AB ⊙O; #% # (3) set point D is an arbitrary point on the line segment AC (not inclusive), the connection OD, when $ \ frac {1} {2} minimum CD + OD $ 6 is, the diameter AB of the rectification of ⊙O. #% # <img>

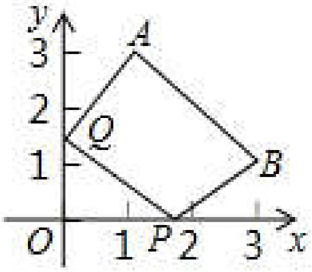


graph:
{"stem":{"pictures":[{"picturename":"1000039726_Q_1.jpg","coordinates":{"A":"-13.00,7.00","B":"-10.69,6.97","C":"-11.25,7.98","D":"-12.18,7.46","E":"-9.53,6.96","O":"-11.84,6.99"},"collineations":{"0":"A###O###B###E","1":"A###D###C","2":"C###E"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: DiameterRelation{diameter=AB, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, length=null},TriangleRelation:△ACE,EqualityRelation{AC=CE},EqualityRelation{∠DAO=(1/6*Pi)},PointOnCircleRelation{circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, points=[C]},LineCoincideRelation [iLine1=AB, iLine2=AE],DiameterRelation{diameter=AB, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, length=null},TriangleRelation:△ACE,HeightOfTriangleRelation{geo=△ACE, height=null, base=AE, value=Express:[h]},DualExpressRelation:DualExpressRelation{expresses=[Express:[AB], Express:[h]]},EqualityRelation{AB=v_0},PointOnLineRelation{point=D, line=AC, isConstant=false, extension=false},SegmentRelation:OD,ExtremumRelation [key=Express:[(1/2)*CD+DO], value=Express:[6], extremumType=MIN],ProveConclusionRelation:[Proof:

LineContactCircleRelation{line=CE, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, contactPoint=Optional.absent(), outpoint=Optional.absent()}],SolutionConclusionRelation{relation=DualExpressRelation:DualExpressRelation{expresses=[Express:[AB], Express:[h]]}}

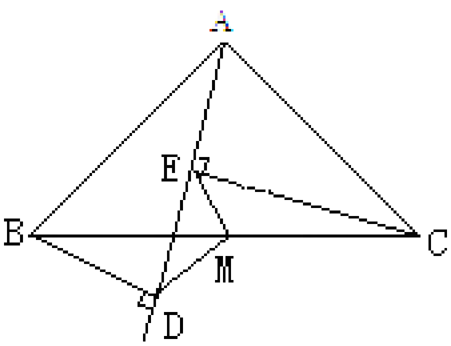
171, topic: FIG., The midpoint of the line at right angles to the plane A (1,3), point B (3,1), the point P, Q, respectively, in the x-axis, y-axis movement, for the minimum circumference of the quadrilateral PBAQ . #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000082384_Q_1.jpg","coordinates":{"A":"1.00,3.00","B":"3.00,1.00","P":"2.00,0.00","Q":"0.00,2.00","O":"0.00,0.00"},"collineations":{"0":"B###P","1":"A###B","2":"A###Q","3":"Q###P","4":"O###Q","5":"O###P"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP:
Know:QuadrilateralRelation{quadrilateral=ABPQ},EqualityRelation{C_ABPQ=v_0},PointRelation:B(3,1), PointOnLineRelation{point=P, line=StraightLine[X] analytic :y=0 slope:0 b:0 isLinearFunction:false, isConstant=false, extension=false},PointOnLineRelation{point=Q, line=StraightLine[X] analytic :y=0 slope:0 b:0 isLinearFunction:false, isConstant=false, extension=false},Minimum:(ExpressRelation:[key:]v_0[v_0=v_0]),SolutionConclusionRelation{relation=Minimum:(ExpressRelation:[key:]v_0[v_0=v_0])}

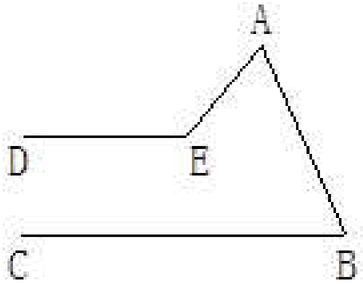
172, topic: FIG known, △ABC medium, CE⊥AD in E, BD⊥AD in D, BM =CM Proof: ME =MD #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000040695_Q_1.jpg","coordinates":{"A":"-6.35,5.21","B":"-9.00,2.00","C":"-4.00,2.00","D":"-7.26,1.57","E":"-6.97,2.74","M":"-6.50,2.00"},"collineations":{"0":"A###B","1":"A###C","2":"B###M###C","3":"A###E###D","4":"D###B","5":"D###M","6":"M###E","7":"E###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleRelation:△ABC,LinePerpRelation{line1=CE, line2=AD, crossPoint=E},LinePerpRelation{line1=BD, line2=AD, crossPoint=D},EqualityRelation{BM=CM},ProveConclusionRelation:[Proof: EqualityRelation{EM=DM}]

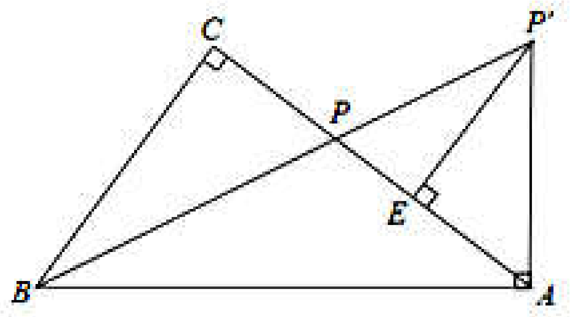
173, topic: FIG, $ DE // CB $, Prove $ ∠AED =∠A + ∠B $.



graph: {"stem":{"pictures":[{"picturename":"1000035800_Q_1.jpg","coordinates":{"A":"-9.00,8.00","B":"-8.00,4.00","C":"-15.00,4.00","D":"-15.00,6.00","E":"-10.00,6.00"},"collineations":{"0":"A###B","1":"A###E","2":"E###D","3":"B###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: LineParallelRelation [iLine1 =DE, iLine2 =CB], ProveConclusionRelation: [Proof: EqualityRelation {∠AED =∠BAE + ∠ABC}]

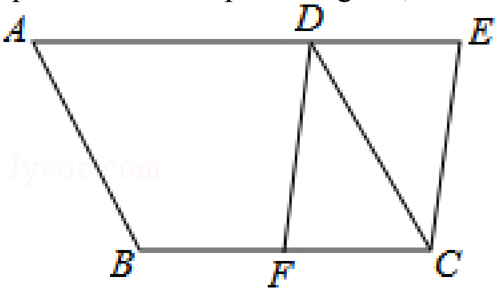
174, topic: FIG at Rt $ \ vartriangle ABC $ in, $ \ angle C =90 ^ \ circ $, the point P is a point of the side AC, the line segment AP clockwise rotation about the point A (corresponding to point P point $ P '$) $ AP when the AP is rotated to the' \ when bot AB $, point B, P, P 'is exactly the same line, this time for $ P'E \ bot AC $ at point E.?#% # (1) Proof: $ \ angle CBP =\ angle ABP $; #% # (2) if $ AB - BC =4 $, $ AC =8 $ seek AE long; #% # (3) when?? the minimum $ \ angle ABC ={60 ^ \ circ} $, $ BC =2 $, the point N is the midpoint of BC, M is a point on the edge of a fixed point BP, connected MC, MN find the $ MC + MN $ value?



graph: [{"variable-equals":{},"picturename":"1000002035_Q_1.jpg","collineations":{"1":"A###E###P###C","0":"B###P###P'"},"coordinates":{"E":"-5.41,0.34","P":"6.32,0.98","A":"-3.75,-0.79","B":"-9.39,-1.01","C":"-7.49,1.77","P'":"-3.94,2.51"}}]

NLP: RightTriangleRelation:RightTriangle:△ABC[Optional.of(C)],EqualityRelation{∠C=(1/2*Pi)},PointOnLineRelation{point=P, line=AC, isConstant=false, extension=false},PointOnLineRelation{point=B, line=StraightLine[n_0] analytic :y=k_n_0*x+b_n_0 slope:null b:null isLinearFunction:false, isConstant=false, extension=false},PointOnLineRelation{point=P, line=StraightLine[n_0] analytic :y=k_n_0*x+b_n_0 slope:null b:null isLinearFunction:false, isConstant=false, extension=false},PointOnLineRelation{point=P', line=StraightLine[n_0] analytic :y=k_n_0*x+b_n_0 slope:null b:null isLinearFunction:false, isConstant=false, extension=false},LinePerpRelation{line1=P'E, line2=AC, crossPoint=E},EqualityRelation{AE=v_1},EqualityRelation{AB-BC=4},EqualityRelation{AC=8},Calculation:(ExpressRelation:[key:]v_1),EqualityRelation{∠ABC=((1/3*Pi))},EqualityRelation{BC=2},MiddlePointOfSegmentRelation{middlePoint=N,segment=BC},PointOnLineRelation{point=M, line=BP, isConstant=false, extension=false},SegmentRelation:MC,SegmentRelation:MN,Minimum:(ExpressRelation:[key:]CM+MN),ProveConclusionRelation:[Proof: EqualityRelation{∠CBP=∠ABP}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]AE)},SolutionConclusionRelation{relation=Minimum:(ExpressRelation:[key:]CM+MN)}

175, topic: As shown, the side AD of the parallelogram ABCD extended to the point E, so $ DE ={\ frac {1} {2}} AD $, connector CE, F is the midpoint of edge BC, the connection FD. % # # (1) Proof: CEDF quadrilateral is a parallelogram;% # # (2) If AB =3, AD =4, ∠A =60 °, long seeking CE #% # <img>.



graph: {"stem":{"pictures":[{"picturename":"1000031875_Q_1.jpg","coordinates":{"A":"-11.50,4.60","B":"-10.00,2.00","C":"-6.00,2.00","D":"-7.50,4.60","E":"-5.50,4.60","F":"-8.00,2.00"},"collineations":{"0":"A###D###E","1":"A###B","2":"E###C","3":"B###F###C","4":"D###C","5":"D###F"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

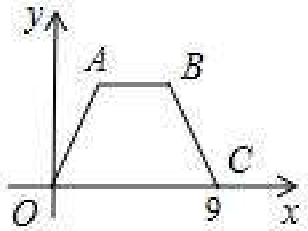
NLP: PointOnLineRelation{point=E, line=AD, isConstant=false, extension=true},ParallelogramRelation{parallelogram=Parallelogram:ABCD},EqualityRelation{DE=(1/2)*AD},SegmentRelation:CE,MiddlePointOfSegmentRelation{middlePoint=F,segment=BC},SegmentRelation:FD,EqualityRelation{CE=v_0},EqualityRelation{AB=3},EqualityRelation{AD=4},EqualityRelation{∠BAD=(1/3*Pi)},Calculation:(ExpressRelation:[key:]v_0),ProveConclusionRelation:[Proof: ParallelogramRelation{parallelogram=Parallelogram:CEDF}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]CE)}

176, topic: the $ ⊙O $ in, AB diameter, point C is the point on a circle, the chord AC folded along the minor arc AB in the cross points D, link CD.?#%#(1) in FIG. 1, If the point D coincides with the center O, $ AC =2 $, $ ⊙O $ seeking radius r;? #% # (2) in FIG. 2, when the center point D and O do not coincide, $ ∠BAC =25 ° $, please write $ ∠DCA $ degrees.

graph: {"stem":{"pictures":[],"appliedproblems":{}},"substems":[{"substemid":"1","questionrelies":"","pictures":[{"picturename":"1000026195_Q_1.jpg","coordinates":{"A":"2.40,2.50","B":"7.60,5.50","C":"7.60,2.50","O":"5.00,4.00","D":"5.00,4.00"},"collineations":{"0":"A###O###D###B","1":"A###C","2":"C###O","3":"C###D"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"A###C###B"}]}],"appliedproblems":{}},{"substemid":"2","questionrelies":"","pictures":[{"picturename":"1000026195_Q_1.jpg","coordinates":{"A":"3.40,-7.50","B":"8.60,-4.50","C":"8.82,-7.03","D":"6.74,-5.57","O":"6.00,-6.00"},"collineations":{"0":"A###O###D###B","1":"C###A","2":"C###D"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"A###B###C"}]}],"appliedproblems":{}}]}

NLP: ChordOfCircleRelation{chord=AC, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, chordLength=null,straightLine=null},CircleRelation{circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}},DiameterRelation{diameter=AB, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, length=null},PointOnCircleRelation{circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, points=[C]},SegmentRelation:CD,CircleCenterRelation{point=O, conic=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}},(ExpressRelation:[key:]1),PointCoincidenceRelation{point1=D, point2=O},EqualityRelation{AC=2},RadiusRelation{radius=null, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, length=Express:[r]},Calculation:(ExpressRelation:[key:]r),CircleCenterRelation{point=O, conic=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}},(ExpressRelation:[key:]2),NegativeRelation{relation=PointCoincidenceRelation{point1=D, point2=O}},EqualityRelation{∠CAO=(5/36*Pi)},Calculation:AngleRelation{angle=∠ACD},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]r)},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]∠ACD)}

177, topic: FIG, trapezoid ABCO, it is known $AB \parallel OC$, $AO = BC = 5$, from the point A to the x-axis is 4, the coordinates of point C is (9,0), seek the coordinates of point B. #% # <img>



graph:
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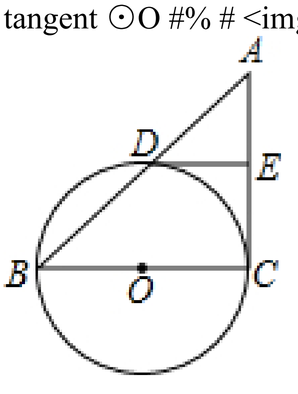
NLP: TrapezoidRelation{trapezoid=Trapezoid:ABCO, isRandomOrder:true},LineParallelRelation [iLine1=AB, iLine2=OC],MultiEqualityRelation [multiExpressCompare=AO=BC=5, originExpressRelationList=[], keyWord=null, result=null],PointToLineDistanceRelation{point=A, line=StraightLine[X] analytic :y=0 slope:0 b:0 isLinearFunction:false, distance=Express:[4]},PointRelation:C(9,0),Coordinate:PointRelation:B,SolutionConclusionRelation{relation=Coordinate:PointRelation:B}

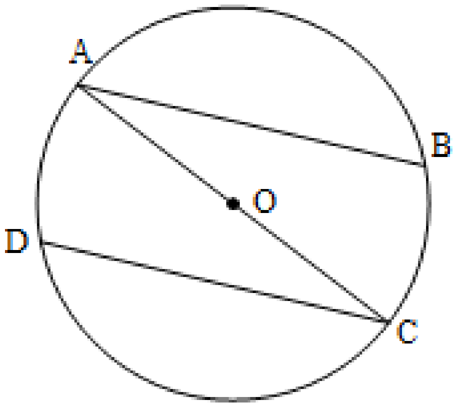
178, topic: FIG known ⊙O diameter of BC, AC ⊙O cut at the point C, AB ⊙O cross at point D, E AC midpoint connected DE #% # (1) if AD. =DB, OC =5, a long seek tangent AC;% # # (2) Proof: ED is tangent ⊙O #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000080991_Q_1.jpg","coordinates":{"A":"-1.01,6.62","B":"-10.95,-3.44","C":"-0.95,-3.39","D":"-5.98,1.59","E":"-0.98,1.62","O":"-5.95,-3.41"},"collineations":{"0":"B###O###C","1":"A###E###C","2":"B###D###A","3":"D###E"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"D###B###C"}]}],"appliedproblems":{}},"substems":[]}

NLP: DiameterRelation{diameter=BC, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, length=null},LineContactCircleRelation{line=AC, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, contactPoint=Optional.of(C), outpoint=Optional.of(A)},LineCrossCircleRelation{line=AB, circle=⊙O, crossPoints=[D], crossPointNum=1},MiddlePointOfSegmentRelation{middlePoint=E,segment=AC},SegmentRelation:DE,LineContactCircleRelation{line=AC, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, contactPoint=Optional.of(C), outpoint=Optional.of(A)},EqualityRelation{AC=v_0},EqualityRelation{AD=BD},EqualityRelation{CO=5},Calculation:(ExpressRelation:[key:]v_0),SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]AC)},ProveConclusionRelation:[Proof: LineContactCircleRelation{line=ED, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, contactPoint=Optional.of(D), outpoint=Optional.of(E)}]

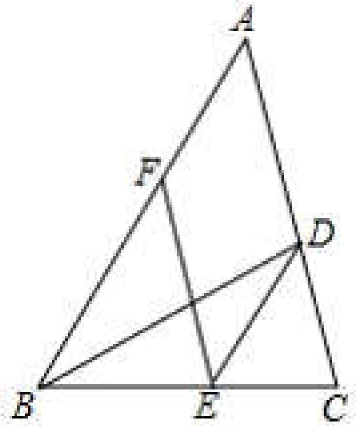
179, topic: as shown, the diameter of the AC is ⊙O, AB, CD are ⊙O two chords, and $ \ widehat {AD} =\ widehat {BC} $, seeking $ \ widehat {DAB} $ of the degree circumferential angle. #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000083401_Q_1.jpg","coordinates":{"A":"-1.08,0.85","B":"1.38,0.00","C":"1.08,-0.85","D":"-1.38,0.00","O":"0.00,0.00"},"collineations":{"0":"A###O###C","1":"B###A","2":"C###D"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"A###B###C###D"}]}],"appliedproblems":{}},"substems":[]}

NLP: DiameterRelation{diameter=AC, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, length=null},ChordOfCircleRelation{chord=AB, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, chordLength=null,straightLine=null},ChordOfCircleRelation{chord=CD, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, chordLength=null,straightLine=null},EqualityRelation{⌒AD=⌒BC}

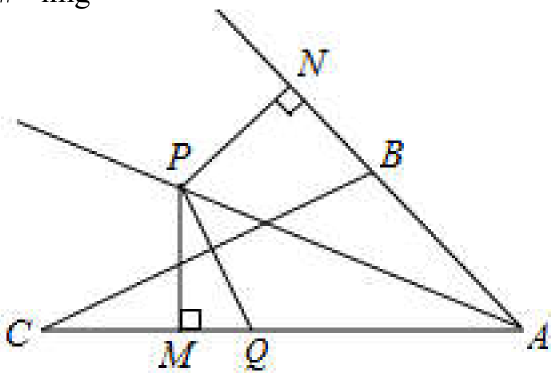
180, topic: Figure $, BD $ is $ \ bigtriangleup ABC $ angle bisector point $ E, F $ respectively $ BC, on AB $, and $ DE∥AB, EF \ parallel AC $ #.? % $ # (1) Prove $ $: BE =AF; $ #% # $ (2) $ If $ ∠ABC =60 °, BD =6, $ $ quadrangular seeking area of ADEF $?.



graph:
{"stem":{"pictures":[{"picturename":"1000010204_Q_1.jpg","coordinates":{"A":"4.33,7.50","B":"0.00,0.00","C":"5.76,0.00","D":"5.19,3.00","E":"3.46,0.00","F":"2.60,4.50"},"collineations":{"0":"B###E###C","1":"B###F###A","2":"C###D###A","3":"D###B","4":"E###D","5":"E###F"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[{"substemid":"1","questionrelies":"","pictures":[],"appliedproblems":{}},{"substemid":"2","questionrelies":"1","pictures":[],"appliedproblems":{}}]}

NLP: TriangleRelation:△ABC,PointOnLineRelation{point=E, line=BC, isConstant=false, extension=false},PointOnLineRelation{point=F, line=AB, isConstant=false, extension=false},LineParallelRelation [iLine1=DE, iLine2=AB],LineParallelRelation [iLine1=EF, iLine2=AC],AngleBisectorRelation{line=BD,angle=∠EBF, angle1=∠DBF, angle2=∠DBE},Know:QuadrilateralRelation{quadrilateral=ADEF},EqualityRelation{S_ADEF=v_0},EqualityRelation{∠EBF=(1/3*Pi)},EqualityRelation{BD=6},Calculation:(ExpressRelation:[key:]v_0),ProveConclusionRelation:[Proof: EqualityRelation{BE=AF}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]S_ADEF)}

181, topic: As shown in the △ABC, ∠BAC angle bisector perpendicular bisector BC PQ intersect at a point P, respectively, through the point P to a point for PN⊥AB N, PM⊥AC to M, Proof: BN =CM. #%# <img>

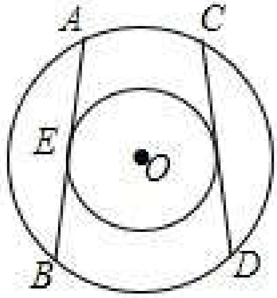


graph:
{"stem":{"pictures":[{"picturename":"1000040631_Q_1.jpg","coordinates":{"A":"-8.00,2.00","B":"-10.00,5.00","C":"-16.00,2.00","P":"-13.84,5.13","N":"-11.24,6.86","M":"-13.84,2.00","Q":"-12.25,2.00"},"collineations":{"0":"A###P","1":"C###B","2":"P###N","3":"P###Q","4":"P###M","5":"A###Q###M###C","6":"A###B###N"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: AngleBisectorRelation{line=AP,angle=∠BAQ, angle1=∠BAP, angle2=∠

PAQ},MiddlePerpendicularRelation [iLine1=PQ, iLine2=BC, crossPoint=Optional.absent()],TriangleRelation:△ABC,LinePerpRelation{line1=PN, line2=AB, crossPoint=N},LinePerpRelation{line1=PM, line2=AC, crossPoint=M},ProveConclusionRelation:[Proof: EqualityRelation{BN=CM}]

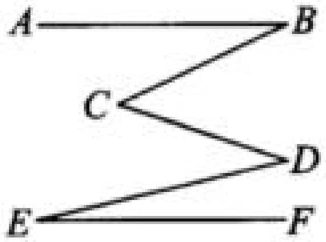
182, topic: As shown, an O as the center in two concentric circles, large circle chord AB and CD are equal, and the small circle tangent to AB and the point E, Proof: small circle tangent to the CD.



graph:
{"stem":{"pictures":[{"picturename":"1000008260_Q_1.jpg","coordinates":{"A":"-1.21,3.81","B":"-2.70,-2.95","C":"1.21,3.81","D":"2.70,-2.95","E":"-1.95,0.43","O":"0.00,0.00"},"collineations":{"0":"D###C","1":"E###B###A"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"D###B###C###A"},{"center":"O","pointincircle":"E"}]}],"appliedproblems":{}},"substems":[]}

NLP: ChordOfCircleRelation{chord=AB, circle=Circle[⊙O_0]{center=O_0, analytic=(x-x_O_0)^2+(y-y_O_0)^2=r_O_0^2}, chordLength=null,straightLine=null}

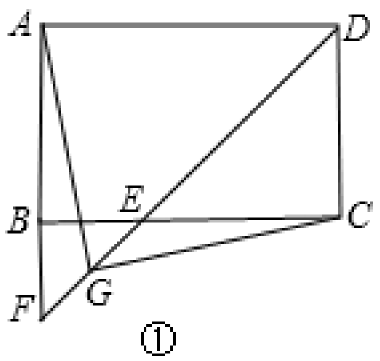
183, topic: FIG known $\angle B =25^{\circ}$, $\angle BCD =45^{\circ}$, $\angle CDE =30^{\circ}$, $\angle E =10^{\circ}$, Proof: $AB /\!/ EF$.

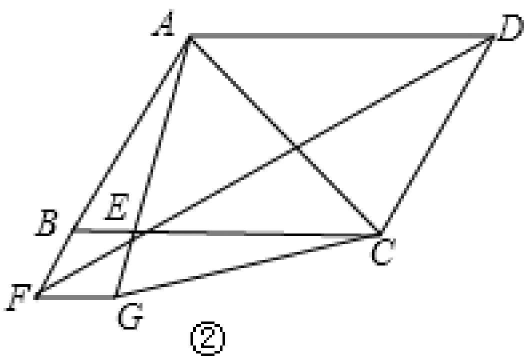


graph:
{"stem":{"pictures":[{"picturename":"1000021676_Q_1.jpg","coordinates":{"A":"0.00,2.93","B":"4.83,2.93","C":"2.39,1.79","D":"4.92,0.87","E":"0.00,0.00","F":"5.00,0.00"},"collineations":{"0":"B###C","1":"C###D","2":"D###E","3":"A###B","4":"E###F"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: EqualityRelation{∠ABC=(5/36*Pi)},EqualityRelation{∠BCD=(1/4*Pi)},EqualityRelation{∠CDE=(1/6*Pi)},EqualityRelation{∠DEF=(1/18*Pi)},ProveConclusionRelation:[Proof: LineParallelRelation [iLine1=AB, iLine2=EF]]

184, topic: the parallelogram ABCD, $\angle ADC$ cross bisector of straight line BC at point E, AB extension lines cross at point F, is connected AC.?#%#(1) FIG ① , if ∠ $.?.? ADC =90^{\circ}$, G is the midpoint of EF connected AG, CG #% # ① Proof: $bE =BF$ #% # ② Please $\triangle AGC$ determines the shape of reasons;? #% # (2) in FIG ② , if $\angle ADC =60^{\circ}$, the rotation of the segment FB to 60° FG clockwise about point F, is connected AG, CG, then $\triangle AGC$ is like shape.





graph:
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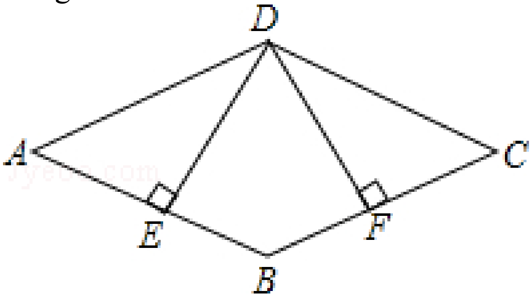
NLP: AngleBisectorRelation{line=DG,angle=∠ADC, angle1=∠ADG, angle2=∠CDG},ParallelogramRelation{parallelogram=Parallelogram:ABCD},SegmentRelation:AC,EqualityRelation{∠ADC=(1/2*Pi)},MiddlePointOfSegmentRelation{middlePoint=G,segment=EF},SegmentRelation:AG,SegmentRelation:CG,EqualityRelation{∠ADC=(1/3*Pi)},RotateRelation{preData=FB, afterData=FG, rotatePoint=F, rotateDegree='(1/3*Pi)', rotateDirection=CLOCKWISE},SegmentRelation:AG,SegmentRelation:CG,ProveConclusionRelation:[Proof: EqualityRelation{BE=BF}],SolveGeoShapeConclusionRelation{iPolygon=△AGC, iPolygonType=SOLVEENCLOSESHAPE},ShapeJudgeConclusionRelation{geoEle=△AGC}

185, topic: FIG., A diamond quadrangle ABCD, DE⊥AB in E, DF⊥BC in F. Proof: DE =DF #% # <img>.



graph:
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NLP: RhombusRelation{rhombus=Rhombus:ABCD},LinePerpRelation{line1=DE, line2=AB, crossPoint=E},LinePerpRelation{line1=DF, line2=BC, crossPoint=F},ProveConclusionRelation:[Proof: EqualityRelation{DE=DF}]

186, topic: ABCD in the diamond, ∠ABC =60 °, E is an arbitrary point on a diagonal line AC, F is a point on an extension line segment BC, and CF =AE, connected BE, EF #% # (1). 1, when E is the midpoint of a line segment AC when, confirmation bE =EF. #% # (2) in FIG. 2, when the point E is not the midpoint of the line segment AC, and the other conditions remain unchanged, you determination (1) is established in the conclusions, and the reasons; #% # (3) shown in Figure 3, when the point E is any point to extend the line segment AC, other conditions constant, (1) if the conclusion is established? establishment, please give proof; if not established, please explain the reason #% # <img>.

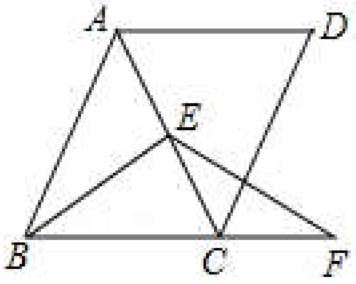

图1

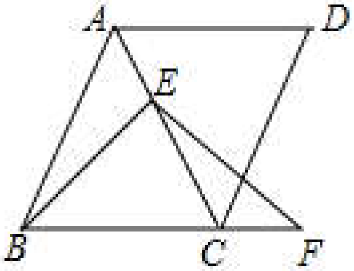

图2

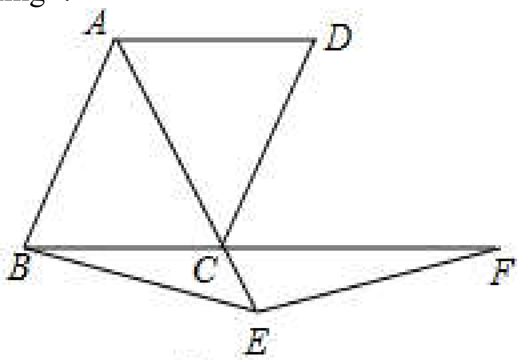

图3

graph:
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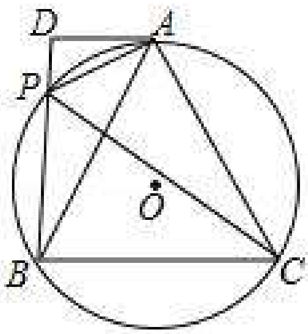
NLP: RhombusRelation{rhombus=Rhombus:ABCD},EqualityRelation{∠ABC=(1/3*Pi)},PointOnLineRelation{point=E, line=AC, isConstant=false, extension=false},PointOnLineRelation{point=F, line=BC, isConstant=false, extension=true},EqualityRelation{CF=AE},SegmentRelation:BE,SegmentRelation:EF,(ExpressRelation:[key:]1),MiddlePointOfSegmentRelation{middlePoint=E,segment=AC},MiddlePointOfSegmentRelation{middlePoint=Q_0,segment=AC},(ExpressRelation:[key:]2),NegativeRelation{relation=PointRelation:E},(ExpressRelation:[key:]3),PointOnLineRelation{point=E, line=AC, isConstant=false, extension=false},ProveConclusionRelation:[Proof: EqualityRelation{BE=EF}]

187, topic: FIG., A, P, B, C are points on the four $ ⊙O $, $ ∠APC =∠BPC =60 ° $, through the point A as $ ⊙O $ tangent of the cross extension BP line at point D.?#%#(1) Proof: $ △ADP∽ △BDA $; #% # relationship between the number (2) try to explore segments PA, PB, PC, and prove your conclusion;?? #% # (3) If the $ AD =2 $, $ PD =1 $, seeking long segment BC.



graph:
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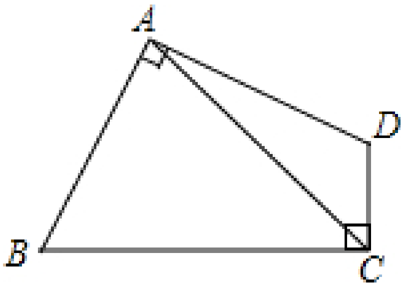
NLP: PointOnCircleRelation{circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, points=[A, P, B, C]},MultiEqualityRelation [multiExpressCompare=∠APD=∠BPC=(1/3*Pi), originExpressRelationList=[], keyWord=null, result=null],LineContactCircleRelation{line=AD, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, contactPoint=Optional.of(A), outpoint=Optional.of(D)},Calculation:(ExpressRelation:[key:](AP/BP)),Calculation:(ExpressRelation:[key:](BP/CP)),EqualityRelation{BC=v_1},EqualityRelation{AD=2},EqualityRelation{DP=1},Calculation:(ExpressRelation:[key:]v_1),ProveConclusionRelation:[Proof: TriangleSimilarRelation{triangleA=△ADP, triangleB=△BDA}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:](AP/BP))},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:](BP/CP))},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]BC)}

188, topic:. As shown, the quadrangle ABCD, ∠BAD =∠BCD =90 °, AB =AD, if the area of the quadrangle ABCD is $ 24 {{cm} ^ {2}} $ is the number of the AC long cm. #% # <img>

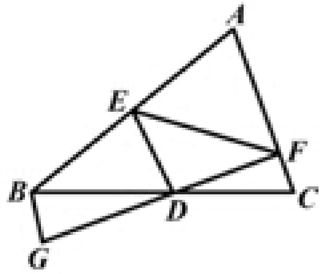


graph:
{"stem":{"pictures":[{"picturename":"1000050478_Q_1.jpg","coordinates":{"A":"-6.00,6.00","B":"-8.00,2.00","C":"-2.00,2.00","D":"-2.00,4.00"},"collineations":{"0":"A###D","1":"C###D","2":"B###C","3":"A###C","4":"B###A"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: EqualityRelation {AC =v_0}, known conditions QuadrilateralRelation {quadrilateral =ABCD}, MultiEqualityRelation [multiExpressCompare =∠BAD =∠BCD =(1/2 * Pi), originExpressRelationList =[], keyWord =null, result =null] , EqualityRelation {AB =AD}, known conditions QuadrilateralRelation {quadrilateral =ABCD}, EqualityRelation {S_ABCD =24}, evaluation (size) :(ExpressRelation: [key:] v_0), SolutionConclusionRelation {relation =evaluator (size) : (ExpressRelation: [key:] AC)}

189, topic: FIG at $ △ABC $, the points E, F, respectively, AB, the AC, $ DE⊥DF $, point D is the midpoint of BC, FD extension point G, so $ DG =DF $ connected BG.?#%#(1) Prove:? $ △BGD≌ △CFD

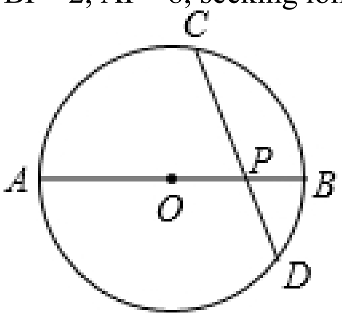
$; #% # (2) comparison $ BE + EF and the size CF2 $ <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000021294_Q_1.jpg","coordinates":{"A":"5.00,5.00","B":"0.00,0.00","C":"7.00,0.00","D":"3.50,0.00","E":"2.47,2.47","F":"6.50,1.24","G":"0.50,-1.24"},"collineations":{"0":"A###B###E","1":"D###G###F","2":"E###F","3":"D###E","4":"D###F","5":"G###B","6":"A###F###C","7":"B###D###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleRelation:△ABC,PointOnLineRelation{point=E, line=AB, isConstant=false, extension=false},PointOnLineRelation{point=F, line=AC, isConstant=false, extension=false},LinePerpRelation{line1=DE, line2=DF, crossPoint=D},MiddlePointOfSegmentRelation{middlePoint=D,segment=BC},PointOnLineRelation{point=G, line=FD, isConstant=false, extension=true},EqualityRelation{DG=DF},SegmentRelation:BG,数字比较大小:DualExpressRelation{expresses=[Express:[EF], Express:[BE+CF]]},ProveConclusionRelation:[Proof: TriangleCongRelation{triangleA=△BGD, triangleB=△CFD}],SolutionConclusionRelation{relation=数字比较大小：DualExpressRelation{expresses=[Express:[EF], Express:[BE+CF]]}}

190, topic: FIG, AB is known $ \ odot O $ diameter, the chord AB and CD intersect at P, ∠APC =60 °, BP =2, AP =8, seeking long CD #% # <. img>

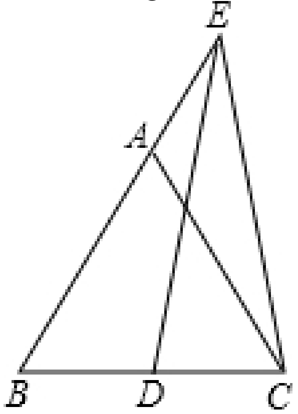


graph:
{"stem":{"pictures":[{"picturename":"1000060715_Q_1.jpg","coordinates":{"A":"-5.00,0.00","B":"5.00,0.00","C":"0.11,5.00","D":"4.39,-2.40","O":"0.00,0.00","P":"3.00,0.00"},"collineations":{"0":"B###A###O###P","1":"C###P###D"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"A###B###C###D"}]}],"appliedproblems":{}},"substems":[]}

NLP: ChordOfCircleRelation{chord=CD, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, chordLength=null,straightLine=null},EqualityRelation{CD=v_0},DiameterRelation{diameter=AB, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, length=null},LineCrossRelation [crossPoint=Optional.of(P), iLine1=CD, iLine2=AB],EqualityRelation{∠CPO=(1/3*Pi)},EqualityRelation{BP=2},EqualityRelation{AP=8},Calculation:(ExpressRelation:[key:]v_0) ,SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]CD)}

191, topic: FIG, △ABC is an equilateral triangle, the point E on the extension line of the BA, the point

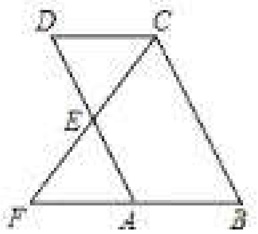
D in the edge BC, and ED =EC, △ABC if the side length of 4, AE =2, find BD. long. #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000062207_Q_1.jpg","coordinates":{"A":"-2.00,3.45","B":"-4.00,0.00","C":"0.00,0.00","D":"-2.00,0.00","E":"-1.00,5.19"},"collineations":{"0":"C###E","1":"E###D","2":"A###C","3":"E###A###B","4":"B###D###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP:
EqualityRelation{BD=v_0},RegularTriangleRelation:RegularTriangle:△ABC,PointOnLineRelation{point=E, line=BA, isConstant=false, extension=true},PointOnLineRelation{point=D, line=BC, isConstant=false, extension=false},EqualityRelation{DE=CE},EqualityRelation{AE=2},Calculation:(ExpressRelation:[key:]v_0),SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]BD)}

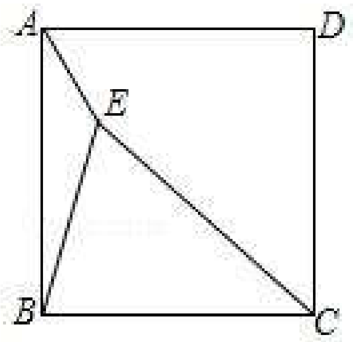
192, topic: FIG known quadrangle ABCD is a parallelogram, BA point F on the extension line of the connecting cross-CF AD at point E #% # (1) Prove:?? △CDE∽ △FAE #% # (2) when E is the midpoint of AD and BC =2CD $ $, the confirmation: $ \ angle F =\ angle BCF $



graph:
[{"circles":[],"variable-equals":{},"picturename":"1000002996_Q_1.jpg","collineations":{"3":"D###C","2":"F###B###A","1":"F###E###C","0":"D###E###A","4":"C###B"},"coordinates":{"D":"-9.45,2.25","E":"-8.52,-0.28","F":"-10.28,-2.87","A":"-7.58,-2.82","B":"-4.89,-2.77","C":"-6.75,2.30"}}]

NLP: ParallelogramRelation{parallelogram=Parallelogram:ABCD},PointOnLineRelation{point=F, line=BA, isConstant=false, extension=true},LineCrossRelation [crossPoint=Optional.of(E), iLine1=CF, iLine2=AD],MiddlePointOfSegmentRelation{middlePoint=E,segment=AD},EqualityRelation{BC=2*CD}, ProveConclusionRelation:[Proof: TriangleSimilarRelation{triangleA=△CDE, triangleB=△FAE}],ProveConclusionRelation:[Proof: EqualityRelation{∠AFE=∠BCE}]

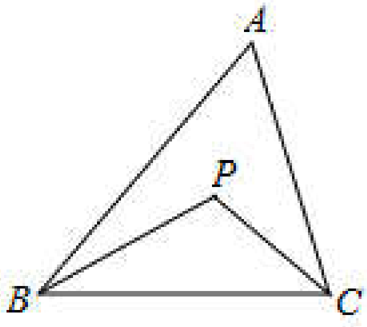
193, topic: FIG point E to a point, the square connecting the AE $ $ ABCD $, BE, CE, $ known $ AE =1, BE =2, CE =3 $ #% # $ (1) $? seeking $ \ angle AEB;? $ #% # $ (2) $ $ ABCD $ demand side length.



graph:
{"stem":{"pictures":[{"picturename":"10000_Q_1.jpg","coordinates":{"A":"3.00,5.00","B":"4.00,1.17","C":"7.83,2.17","D":"6.83,6.00","E":"4.00,4.00"},"collineations":{"0":"B###A","1":"B###E","2":"B###C","3":"A###D","4":"D###C","5":"A###E","6":"C###E"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: PositionOfPoint2RegionRelation {point =E, region =EnclosedRegionRelation {name =ABCD, closedShape =Square: ABCD}, position =inner}, SegmentRelation: AE, SegmentRelation: BE, SegmentRelation: CE, EqualityRelation {AE =1}, EqualityRelation {BE =2}, EqualityRelation {CE =3}, the size of the required angle: AngleRelation {angle =∠AEB}, known conditions QuadrilateralRelation {quadrilateral =ABCD}, evaluation (size) :(ExpressRelation: [key:] AB), evaluation (size) :(ExpressRelation: [key:] BC), evaluation (size) :(ExpressRelation: [key:] CD), evaluation (size) :(ExpressRelation: [key:] AD), SolutionConclusionRelation { evaluation relation =(size) :(ExpressRelation: [key:] ∠AEB)}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] AB)}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] BC)}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] CD)}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] AD)}

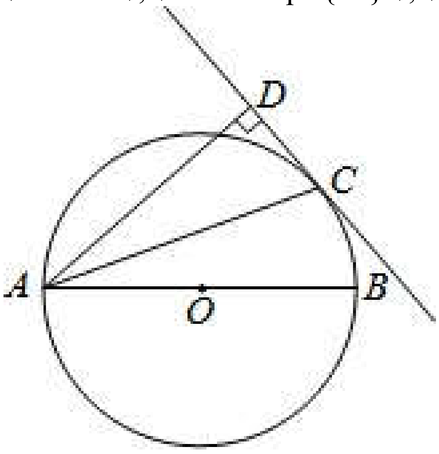
194, topic: FIG., It is known that the point P is connected to the PB $ △ABC $, PC Proof: #% # (1) $ {AB + AC}＞{PB + PC} $; #%..?? # (2) $ ∠BPC＞∠A $.



graph:
{"stem":{"pictures":[{"picturename":"1000022503_Q_1.jpg","coordinates":{"A":"0.00,5.00","B":"-5.00,0.00","C":"3.00,0.00","D":"0.00,2.00"},"collineations":{"0":"A###B","1":"A###C","2":"B###D","3":"D###C","4":"B###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleRelation:△ABC,PositionOfPoint2RegionRelation{point=P, region=EnclosedRegionRelation{name=ABC, closedShape=△ABC}, position=inner},SegmentRelation:PB,SegmentRelation:PC,ProveConclusionRelation:[Proof: InequalityRelation{(AB+AC)>(BP+CP)}],ProveConclusionRelation:[Proof: InequalityRelation{∠BPC> ∠BAC}]

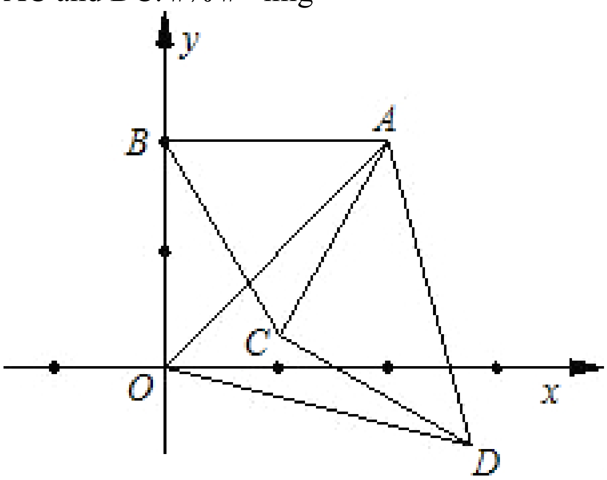
195, topic: As shown, point C is tangent point AB, the AD and through the point C $\odot O$ diameters perpendicular to each other, pedal point D.?#%#(1) Proof: AC bisecting $\angle BAD$;? #% # (2) when the $CD=1$, $AC=\sqrt{10}$, $\odot O$ seek long radius.



graph:
{"stem":{"pictures":[{"picturename":"1000008233_Q_1.jpg","coordinates":{"A":"-3.33,0.00","B":"3.33,0.00","C":"1.83,2.78","D":"1.21,3.57","O":"0.00,0.00"},"collineations":{"0":"D###A","1":"C###A","2":"A###O###B"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"A###B###C"}]}],"appliedproblems":{}},"substems":[]}

NLP: DiameterRelation{diameter=AB, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, length=null},PointOnCircleRelation{circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, points=[C]},PointOnCircleRelation{circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, points=[]},PointOnCircleRelation{circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, points=[]},EqualityRelation{CD=1},EqualityRelation{AC=(10^(1/2))},圆的半径：CircleRelation{circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}},ProveConclusionRelation:[Proof: AngleBisectorRelation{line=AC,angle=∠DAO, angle1=∠CAD, angle2=∠CAO}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]AO)}

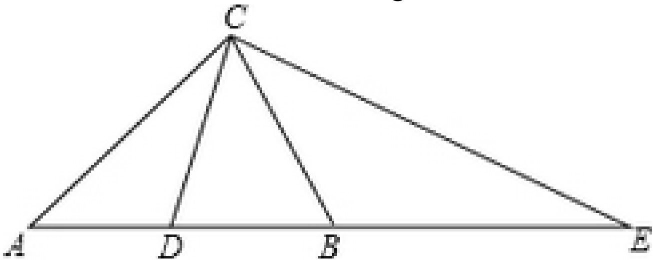
196, topic: FIG known A (a, b), AB⊥y axis of the B, and satisfies $\sqrt{a-2}+{{(b-2)}^{2}}=0$,% # # (1) find the coordinates of point a;% # # (2) respectively AB, AO for the two sides of an equilateral triangle △ABC and △AOD, the test determines the number of segments and the positional relation of the AC and DC. #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000034408_Q_1.jpg","coordinates":{"A":"2,2","B":"0,2"},"collineations":{"0":"B###A"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[{"substemid":"1","questionrelies":"","pictures":[],"appliedproblems":{}},{"substemid":"3","questionrelies":"","pictures":[{"picturename":"1000034408_Q_1.jpg","coordinates":{"C":"1,0.27","D":"2.74,-0.73","O":"0.00,0.00"},"collineations":{"0":"B###C","1":"A###C","2":"D###C","3":"O###A","4":"O###D","5":"D###A"},"variable-equals":{},"circles":[]}],"appliedproblems":{}}]}

NLP: (ExpressRelation:[key:]A*(a,b)),LinePerpRelation{line1=AB, line2=StraightLine[Y] analytic :x=0 slope: b: isLinearFunction:false, crossPoint=B},EqualityRelation{((a-2)^(1/2))+((b-2)^2)=0},Coordinate:PointRelation:A,Calculation:(ExpressRelation:[key:](AC/CD)),SolutionConclusionRelation{relation=Coordinate:PointRelation:A},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:](AC/CD))},JudgePostionConclusionRelation:[data1=AC, data2=DC]

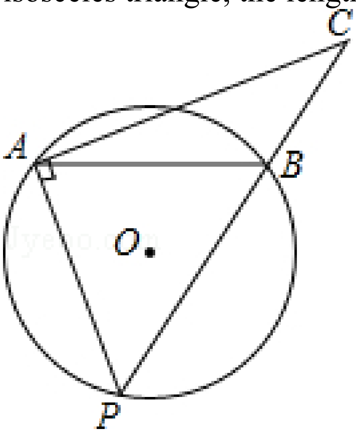
197, topic: CB, CD △AEC are obtuse and an acute angle with the center line of △ABC, AC =AB and Proof: . CE =2CD #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000040366_Q_1.jpg","coordinates":{"A":"-6.91,2.17","B":"-2.91,2.17","C":"-4.33,5.23","D":"-4.19,2.17","E":"1.09,2.17"},"collineations":{"0":"A###C","1":"C###D","2":"C###B","3":"E###C","4":"A###D###E###B"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP:
ObtuseTriangleRelation:ObtuseTriangle:△AEC[Optional.absent()],AcuteTriangleRelation:AcuteTriangle:△ABC,LineRoleRelation{Segment=CD, roleType=CENTRAL_LINE},EqualityRelation{AC=AB},MidianLineOfTriangleRelation{midianLine=CB, triangle=△CAE, top=C, bottom=AE},ProveConclusionRelation:[Proof: EqualityRelation{CE=2*CD}]

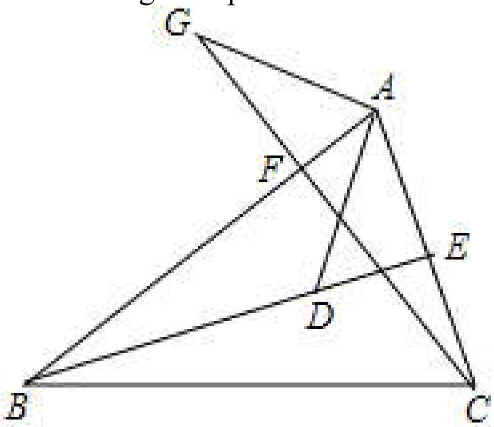
198, topic: FIG, ⊙O 5 of radius, the chord AB =8, P is the fixed point on the major arc of the chord AB, connected AP, AP through the point A perpendicular cross-rays as in the PB points C, when △PAB is an isosceles triangle, the length of segment BC seeking. #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000040835_Q_1.jpg","coordinates":{"A":"-2.00,1.49","B":"2.00,1.50","C":"3.16,3.13","O":"0.00,0.00","P":"-0.78,-2.38"},"collineations":{"0":"A###P","1":"P###B###C","2":"C###A","3":"A###B"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"A###B###P"}]}],"appliedproblems":{}},"substems":[]}

NLP: ChordOfCircleRelation{chord=AB, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, chordLength=null,straightLine=null},LinePerpRelation{line1=CA, line2=AP, crossPoint=A},EqualityRelation{BC=v_1},RadiusRelation{radius=null, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, length=Express:[5]},ChordOfCircleRelation{chord=AB, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, chordLength=null,straightLine=null},EqualityRelation{AB=8},SegmentRelation:AP,IsoscelesTriangleRelation:IsoscelesTriangle:△PAB[Optional.of(A)],Calculation:(ExpressRelation:[key:]v_1),LineCrossRelation[crossPoint=Optional.of(C), iLine1=PB, iLine2=CA],PointOnLineRelation{point=A, line=CA, isConstant=false, extension=false},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]BC)}

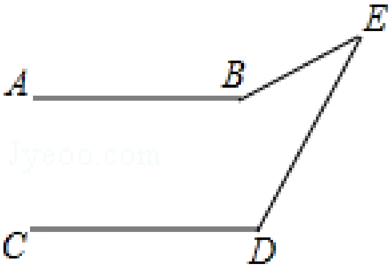
199, topic: As shown in the △ABC, BE, CF are high on both sides of the AC, AB, BD =AC taken in BE, taken on the extension line CG =AB CF connected AD, AG #. % # (1) Proof: △ABD≌ △GCA; #% # (2) determining a shape △ADG Please and prove your conclusion #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000030766_Q_1.jpg","coordinates":{"A":"-7.38,5.45","B":"-11.00,2.00","C":"-6.00,2.00","D":"-7.55,3.38","E":"-6.69,3.72","F":"-8.38,4.50","G":"-9.45,5.62"},"collineations":{"0":"B###C","1":"B###D###E","2":"B###F###A","3":"A###G","4":"A###D","5":"A###E###C","6":"G###F###D###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleRelation:△ABC,LinePerpRelation{line1=BE, line2=AC, crossPoint=E},LinePerpRelation{line1=CF, line2=AB, crossPoint=F},SegmentRelation:BE,EqualityRelation{BD=AC},SegmentRelation:CF,EqualityRelation{CG=AB},SegmentRelation:AD,SegmentRelation:AG,ProveConclusionRelation:[Proof: TriangleCongRelation{triangleA=△ABD, triangleB=△GCA}],ShapeJudgeConclusionRelation{geoEle=△ADG}

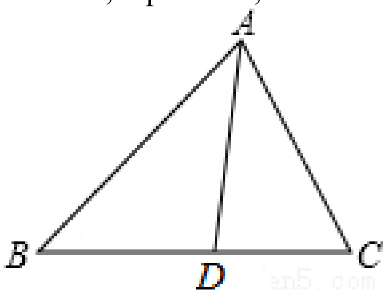
200, topic: FIG, AB∥CD, Proof: . ∠BED =∠B-∠D #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000030610_Q_1.jpg","coordinates":{"A":"-15.00,6.00","B":"-11.00,6.00","C":"-15.00,4.00","D":"-11.00,4.00","E":"-9.00,7.00"},"collineations":{"0":"A###B","1":"B###E","2":"C###D","3":"D###E"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: LineParallelRelation [iLine1 =AB, iLine2 =CD], ProveConclusionRelation: [Proof: EqualityRelation {∠BED =∠ABE-∠CDE}]

201, topic: FIG, △ABC in, AD is the bisector ∠BAC Please indicate AB:. AC =BD:. CD #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000062206_Q_1.jpg","coordinates":{"A":"-11.17,2.83","B":"-14.31,-0.69","C":"-9.90,-0.69","D":"-11.85,-0.69"},"collineations":{"0":"D###A","1":"A###C","2":"A###B","3":"B###D###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleRelation:△ABC,AngleBisectorRelation{line=AD,angle=∠BAC, angle1=∠BAD, angle2=∠CAD},ProveConclusionRelation:[Proof: EqualityRelation{(AB)/(AC)=(BD)/(CD)}]

202, topic: 1, in the square ABCD, the extension to the point M BC, CD extended to the point N, that the BM =DN, MN connected to the cross point of an extension line of the BD E #% # (1) Proof: $. BD + 2DE =\ sqrt {2} BM $ #% # (2) in FIG. 2, cross-connect BN AD at point F., MF cross-connected at point G. If the BD AF: FD =1: 2, and CM =2, DG seek length. #% # <img>

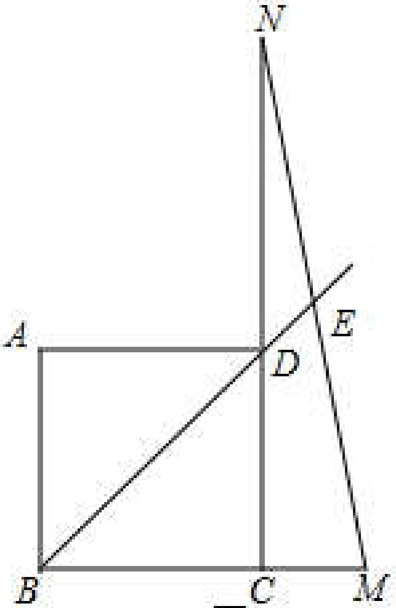


图1

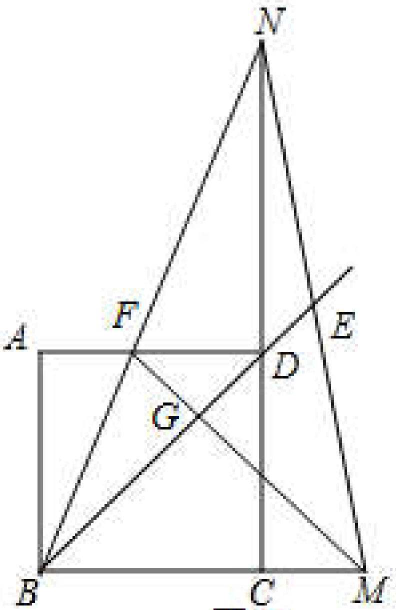
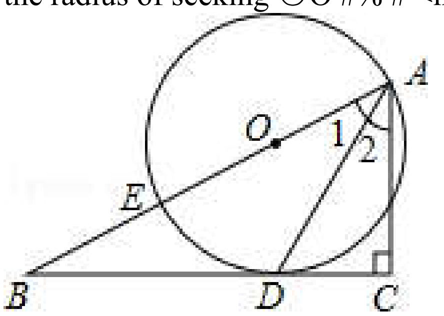


图 2

graph: {"stem":{"pictures":[{"picturename":"95A12E4267434E4A8E45A89FE515F5D2.jpg","coordinates":{"A":"-13.00,7.00","B":"-13.00,3.00","C":"-9.00,3.00","D":"-9.00,7.00","E":"-7.00,9.00","F":"-11.67,7.00","G":"-10.00,6.00","M":"-5.00,3.00","N":"-9.00,15.00"},"collineations":{"0":"A###B","1":"D###F###A","2":"B###F###N","3":"B###M###C","4":"B###G###D###E","5":"C###D###N","6":"M###E###N","7":"F###G###M"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[{"substemid":"2","questionrelies":"1","pictures":[],"appliedproblems":{}}]}

NLP: SquareRelation{square=Square:ABCD},PointOnLineRelation{point=M, line=BC, isConstant=false, extension=true},PointOnLineRelation{point=N, line=CD, isConstant=false, extension=true},EqualityRelation{BM=DN},LineCrossRelation [crossPoint=Optional.of(E), iLine1=MN, iLine2=BD],EqualityRelation{DG=v_0},(ExpressRelation:[key:]2),LineCrossRelation [crossPoint=Optional.of(F), iLine1=BN, iLine2=AD],LineCrossRelation [crossPoint=Optional.of(G), iLine1=MF, iLine2=BD],EqualityRelation{(AF)/(DF)=(1)/(2)},EqualityRelation{CM=2},Calculation:(ExpressRelation:[key:]v_0),ProveConclusionRelation:[Proof: EqualityRelation{BD+2*DE=(2^(1/2))*BM}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]DG)}

203, topic: FIG, known point E on the hypotenuse AB Rt △ABC, the diameter of the AE and the cathetus BC ⊙O tangent at point D #% # (1) Prove:. AD bisects ∠BAC ;. #% # (2) when BE =2, BD =4, the radius of seeking ⊙O #% # <img>



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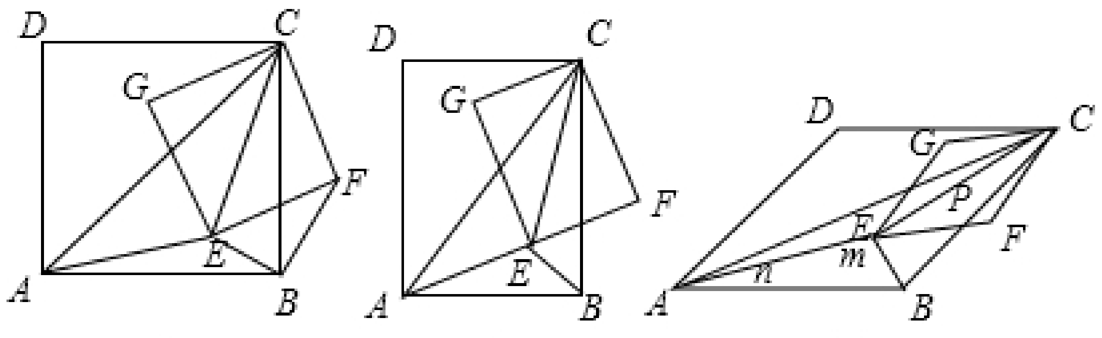
204, topic: known $ AC, EC $ $ quadrangle ABCD respectively, and $ $ $ EFCG diagonal points in $ E $ $ \ vartriangle ABC $, $ \ angle CAE + \ angle CBE ={90 ^ . \ circ} $ #% # (1) in FIG ① , when the quadrangle ABCD $ $ $ and $ EFCG are square, BF #% # ① connection confirmation: $ \ vartriangle CAE \ backsim \ vartriangle CBF $; #. ② If% # $ BE =1, AE =2 $, CE seeking long. #% # (2) in FIG ② , when the quadrangle ABCD $ $ $ and $ EFCG are rectangular and $ \ frac {AB} { BC} =\ frac {EF} {FC} =$ k when, if $ BE =1, AE =2, CE =3 $, find the value of k; #% # (3) in FIG ③ , when the quadrangle ABCD $ and $ $ $ EFCG are rhombic, and $ \ angle DAB =\ angle GEF ={{45} ^ {\ circ}} $, the set #% # $ BE =m, AE =n, CE =p $, inquiry again meet the equivalent relationship between $ m, n, p $ three. (write directly result, the process does not have to write the answer) #% # <img>



图①　图②　图③

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NLP: Know:QuadrilateralRelation{quadrilateral=ABCD},Know:QuadrilateralRelation{quadrilateral=CFEG},TriangleRelation:△ABC,PositionOfPoint2RegionRelation{point=E, region=EnclosedRegionRelation{name=ABC, closedShape=△ABC}, position=inner},EqualityRelation{∠CAE+∠CBE=((1/2*Pi))},SegmentRelation:BF,EqualityRelation{CE=v_0},EqualityRelation{BE=1},EqualityRelation{AE=2},Calculation:(ExpressRelation:[key:]v_0),RectangleRelation{rectangle=Rectangle:ABCD},RectangleRelation{rectangle=Rectangle:EFCG},MultiEqualityRelation [multiExpressCompare=((AB)/(BC))=((EF)/(CF))=k, originExpressRelationList=[], keyWord=null, result=null],EqualityRelation{BE=1},EqualityRelation{AE=2},EqualityRelation{CE=3},Calculation:(ExpressRelation:[key:]k),RhombusRelation{rhombus=Rhombus:ABCD},RhombusRelation{rhombus=Rhombus:EFCG},MultiEqualityRelation [multiExpressCompare=∠BAD=∠FEG=((1/4*Pi)), originExpressRelationList=[], keyWord=null, result=null],EqualityRelation{BE=m},EqualityRelation{AE=n},EqualityRelation{CE=p},Calculation:(ExpressRelation:[key:](m/n)),Calculation:(ExpressRelation:[key:](m/p)),ProveConclusionRelation:[Proof: TriangleSimilarRelation{triangleA=△CAE, triangleB=△CBF}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]CE)},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]k)},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:](m/n))},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:](m/p))}

205, topic: in the right isosceles triangle ABC, ∠BAC =90 °, AB =AC, the straight line through the points A and MN MN∥BC, through the point B is a vertex of an acute angle as Rt △BDE, ∠BDE =90 °, ., and point D on the straight line the MN (not coincident with the point A) #% # (1) in FIG. 1, DE and AC at point P, Proof: . BD =DP #% # (2) in FIG. 2, DE CA and extension lines intersect at the point P, BD =DP is established? If established, please give proof; if not satisfied, please explain the reason #% # (3) shown in Figure 3, DE and AC extension lines intersect at the point P, BD and DP are equal.? Please write your conclusions without proof. #% # <Img>

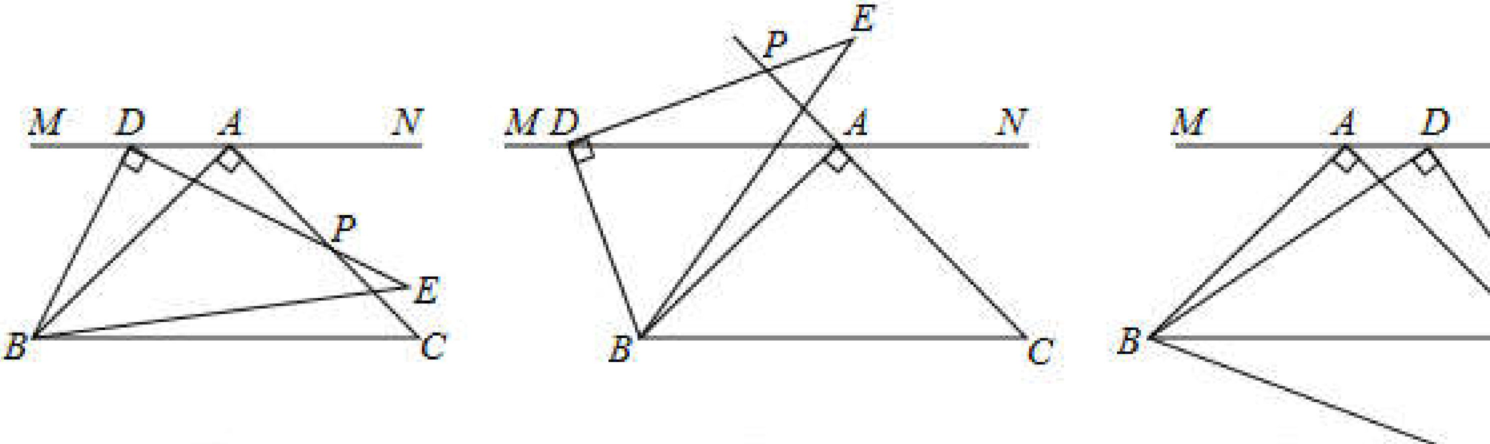

图1 图2 图3

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NLP:
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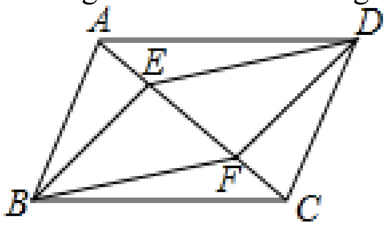
BDP=(1/2*Pi)},PointOnLineRelation{point=D, line=MN, isConstant=false, extension=false},(ExpressRelation:[key:]1),LineCrossRelation [crossPoint=Optional.of(P), iLine1=DE, iLine2=AC],(ExpressRelation:[key:]2),LineCrossRelation [crossPoint=Optional.of(P), iLine1=DE, iLine2=CA],(ExpressRelation:[key:]3),LineCrossRelation [crossPoint=Optional.of(P), iLine1=DE, iLine2=AC],EqualityRelation{BD=DP},ProveConclusionRelation:[Proof: EqualityRelation{BD=DP}],ProveConclusionRelation:[Proof: EqualityRelation{BD=DP}]

. 206, topic: FIG, □ABCD, the points E, F on the straight line AC, BE // DF #% # (1) Proof: BEDF quadrilateral is a parallelogram;% # # (2) if AB⊥AC, AB =4, $ BC =2 \ sqrt {13} $, when the long rectangular BEDF is rectangular, the line segment AE to find. #% # <img>



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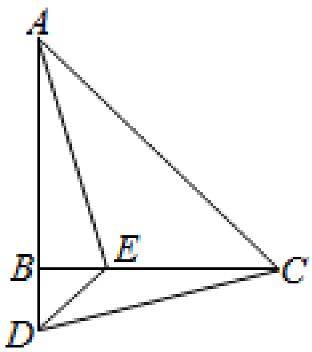
NLP: ParallelogramRelation{parallelogram=Parallelogram:ABCD},PointOnLineRelation{point=E, line=AC, isConstant=false, extension=false},PointOnLineRelation{point=F, line=AC, isConstant=false, extension=false},LineParallelRelation [iLine1=BE, iLine2=DF],EqualityRelation{AE=v_0},LinePerpRelation{line1=AB, line2=AC, crossPoint=A},EqualityRelation{AB=4},EqualityRelation{BC=2*(13^(1/2))},RectangleRelation{rectangle=Rectangle:BEDF},Calculation:(ExpressRelation:[key:]v_0),ProveConclusionRelation:[Proof: ParallelogramRelation{parallelogram=Parallelogram:BEDF}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]AE)}

207, topic: As shown in the △ABC, AB =CB, ∠ABC =90 ° .D extension line AB is the point, the point E on the edge BC, the connection AE, DE, DC, AE =CD #. % # confirmation: ∠BAE =∠BCD #% # <img>.



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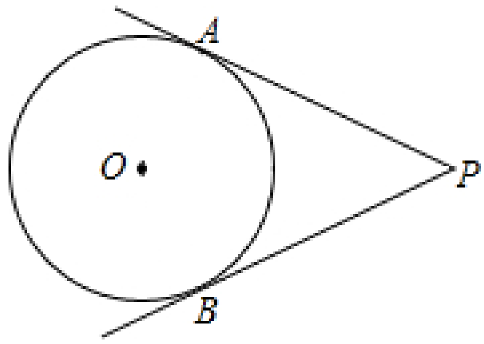
:{}},"substems":[]}

NLP: TriangleRelation:△ABC,EqualityRelation{AB=BC},EqualityRelation{∠ABE=(1/2*Pi)},PointOnLineRelation{point=D, line=AB, isConstant=false, extension=true},PointOnLineRelation{point=E, line=BC, isConstant=false, extension=false},SegmentRelation:AE,SegmentRelation:DE,SegmentRelation:DC,EqualityRelation{AE=CD},ProveConclusionRelation:[Proof: EqualityRelation{∠BAE=∠DCE}]

208, topic: FIG, 4 ⊙O radius of the point P to the center distance of 8, through the point P of the two tangents drawn ⊙O PA and PB, A, B as the cutoff point, the length and find PA ∠ P degree. #% # <img>



graph:
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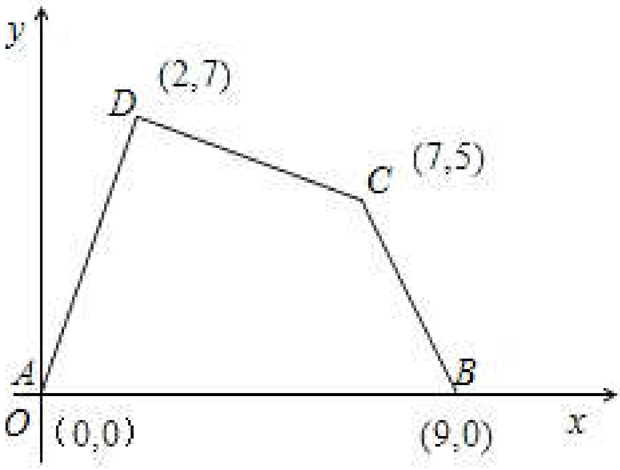
NLP: CircleCenterRelation{point=Q_0, conic=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}},EqualityRelation{AP=v_1},RadiusRelation{radius=null, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, length=Express:[4]},DistanceOfDualPointsRelation{pointA=P, pointB=Q_0, distance=Express:[8]},LineContactCircleRelation{line=PA, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, contactPoint=Optional.of(A), outpoint=Optional.of(P)},LineContactCircleRelation{line=PB, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, contactPoint=Optional.of(B), outpoint=Optional.of(P)},PointOnLineRelation{point=P, line=PA, isConstant=false, extension=false},PointOnLineRelation{point=P, line=PB, isConstant=false, extension=false},PointRelation:A,PointRelation:B,Calculation:(ExpressRelation:[key:]v_1),Calculation:AngleRelation{angle=∠APB},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]AP)},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]∠APB)}

209, topic: As shown in the Cartesian coordinate system, the coordinates of each vertex of the quadrangle ABCD are A (0,0), B (9,0), C (7,5), D (2,7) , find the area of the quadrangle.

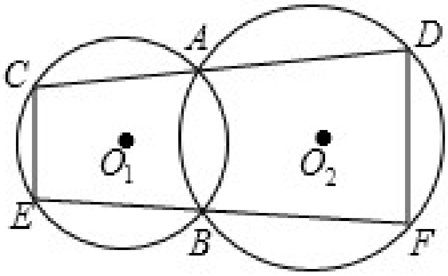


graph:

{"stem":{"pictures":[{"picturename":"1000024452_Q_1.jpg","coordinates":{"A":"0.00,0.00","B":"9.00,0.00","C":"7.00,5.00","D":"2.00,7.00"},"collineations":{"0":"B###A","1":"C###B","2":"D###A","3":"C###D"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: known conditions QuadrilateralRelation {quadrilateral =ABCD}, PointRelation: A (0,0), PointRelation: B (9,0), PointRelation: C (7,5), PointRelation: D (2,7)

210, topic: FIG, $ ⊙ {O_1} $ and $ ⊙ {O_2} $ have been A, B points, a straight line passing through the point A CD deposit $ ⊙ {O_1} $ for C, pay $ ⊙ {O_2} to $ D, EF straight line passing through the cross point B $ ⊙ {O_1} $ in E, pay $ ⊙ {O_2} $ in F. Proof: $ CE∥DF $.

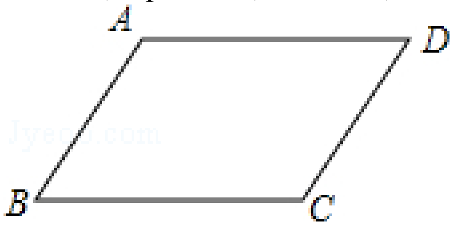


graph:

{"stem":{"pictures":[{"picturename":"1000008191_Q_1.jpg","coordinates":{"A":"-2.17,4.58","B":"-2.12,-0.74","C":"-9.21,3.89","D":"5.80,5.36","E":"-9.29,0.03","F":"5.66,-1.58","O1":"-5.46,1.89","O2":"2.11,1.96"},"collineations":{"0":"D###C###A","1":"F###D","2":"E###C","3":"B###E###F"},"variable-equals":{},"circles":[{"center":"O1","pointincircle":"A###B###C###E"},{"center":"O2","pointincircle":"A###B###F###D"}]}],"appliedproblems":{}},"substems":[]}

NLP: PointOnLineRelation{point=A, line=CD, isConstant=false, extension=false},PointOnLineRelation{point=B, line=EF, isConstant=false, extension=false},CircleCrossRelation{conic1=Circle[⊙O_1]{center=O_1, analytic=(x-x_O_1)^2+(y-y_O_1)^2=r_O_1^2}, conic2=Circle[⊙O_2]{center=O_2, analytic=(x-x_O_2)^2+(y-y_O_2)^2=r_O_2^2},corssPoints=[A, B], corssPointNum=2},LineCrossCircleRelation{line=CD, circle=⊙O_1, crossPoints=[C], crossPointNum=1},LineCrossCircleRelation{line=CD, circle=⊙O_2, crossPoints=[D], crossPointNum=1},LineCrossCircleRelation{line=EF, circle=⊙O_1, crossPoints=[E], crossPointNum=1},LineCrossCircleRelation{line=EF, circle=⊙O_2, crossPoints=[F], crossPointNum=1},ProveConclusionRelation:[Proof: LineParallelRelation [iLine1=CE, iLine2=DF]]

211, topic: FIG, AD =BC, AB =DC, Proof: ∠A + ∠D =180 ° #% # <img>.



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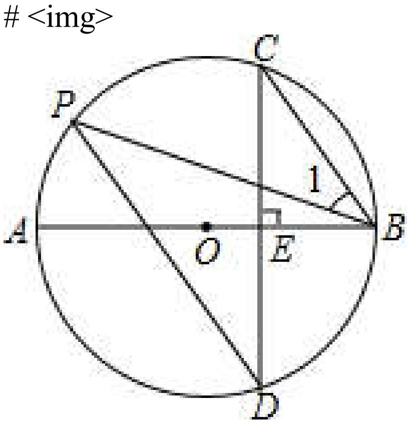
NLP: EqualityRelation{AD=BC},EqualityRelation{AB=CD},ProveConclusionRelation:[Proof: EqualityRelation{∠BAD+∠ADC=(Pi)}]

212, topic: FIG, AB is the diameter of ⊙O chord CD⊥AB at point E, the point P on ⊙O, ∠1 =∠C #% # (1) Prove:. CB∥PD; #% # (2) If BC =3, $ \ sin \ angle P =\ frac {3} {5} $, seeking ⊙O diameter. #% # <img>



graph:
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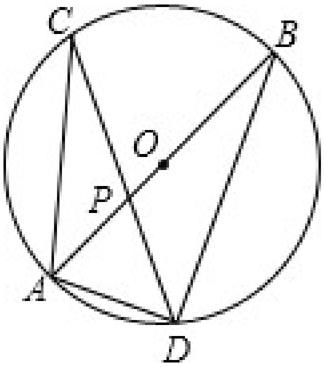
NLP: ChordOfCircleRelation{chord=CD, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, chordLength=null,straightLine=null},DiameterRelation{diameter=AB, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, length=null},LinePerpRelation{line1=CD, line2=AB, crossPoint=E},PointOnCircleRelation{circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, points=[P]},EqualityRelation{∠CBP=∠BCE},EqualityRelation{BC=3},EqualityRelation{sin(∠BPD)=(3/5)},圆的直径：CircleRelation{circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}},ProveConclusionRelation:[Proof: LineParallelRelation [iLine1=CB, iLine2=PD]],SolutionConclusionRelation{relation=圆的直径：CircleRelation{circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}}}

213, topic: As shown in ⊙O, the diameter of the chord AB and CD intersect at the point P, $ ∠CAB

=40 ° $, $ ∠APD =65 ° $ #% # (1) find $ ∠B $.? size;? #% # (2) known in the center O 3, AD long seek distance of the BD.



graph:
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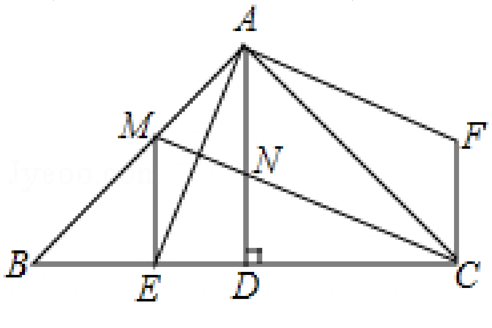
NLP: DiameterRelation{diameter=AB, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, length=null},CircleRelation{circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}},LineCrossRelation [crossPoint=Optional.of(P), iLine1=AB, iLine2=CD],ChordOfCircleRelation{chord=CD, circle=null, chordLength=null,straightLine=null},EqualityRelation{∠CAP=(2/9*Pi)},EqualityRelation{∠APD=(13/36*Pi)},Calculation:AngleRelation{angle=∠DBO},CircleCenterRelation{point=O, conic=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}},EqualityRelation{AD=v_0},PointToLineDistanceRelation{point=O, line=BD, distance=Express:[3]},Calculation:(ExpressRelation:[key:]v_0),SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]∠DBO)},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]AD)}

214, topic: FIG, △ABC medium, $ \ angle BAC =90 {} ^ \ circ $, AB =AC, AD⊥BC, pedal is D, AE equally ∠BAD, BC at point E, the △ABC outer bit F, so FA⊥AE, FC⊥BC #% # (1) Proof: BE =CF; #% # (2) takes on the point M AB, so that BM =2DE, connector MC, cross AD. at point N, the connection ME, Proof: . ① ME⊥BC; ② DE =DN #% # <img>

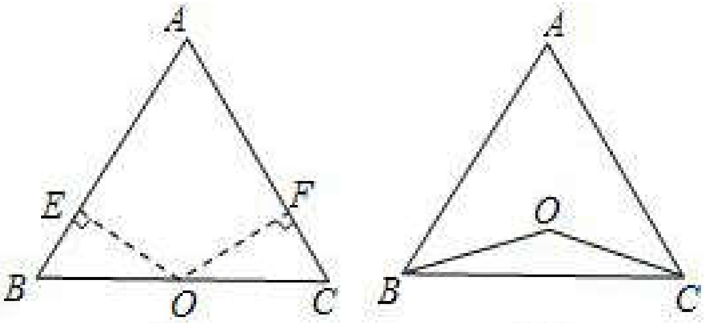


graph:
{"stem":{"pictures":[{"picturename":"1000040428_Q_1.jpg","coordinates":{"A":"2.00,3.00","B":"-1.00,0.00","C":"5.00,0.00","D":"2.00,0.00","E":"0.76,0.00","F":"5.00,1.76","M":"0.76,1.76","N":"2.00,1.24"},"collineations":{"0":"A###M###B","1":"B###E###D###C","2":"C###A","3":"D###A","4":"E###M","5":"M###

N###C","6":"E###A","7":"A###F","8":"F###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleRelation:△ABC,EqualityRelation{∠CAM=(1/2*Pi)},EqualityRelation{AB=AC},LinePerpRelation{line1=AD, line2=BC, crossPoint=D},AngleBisectorRelation{line=AE,angle=∠DAM, angle1=∠DAE, angle2=∠EAM},LineCrossRelation [crossPoint=Optional.of(E), iLine1=AE, iLine2=BC],PositionOfPoint2RegionRelation{point=F, region=EnclosedRegionRelation{name=ABC, closedShape=△ABC}, position=outer},LinePerpRelation{line1=FA, line2=AE, crossPoint=A},LinePerpRelation{line1=FC, line2=BC, crossPoint=C},PointOnLineRelation{point=M, line=AB, isConstant=false, extension=false},EqualityRelation{BM=2*DE},SegmentRelation:MC,LineCrossRelation [crossPoint=Optional.of(N), iLine1=MC, iLine2=AD],SegmentRelation:ME,ProveConclusionRelation:[Proof: EqualityRelation{BE=CF}]

215, topic: as shown, to the point O △ABC sides AB, AC located equidistant from the line, and OB =OC #% # (1) shown in (1), if the point O on the BC side, please explain. AB =AC, the reason;% # # (2) shown in (2), if the point O in the interior of △ABC, AB =AC please indicate reasons; #% # (3) If the point O on the outside of △ABC, AB =AC founded it? Please explain the reason. #% # <img>

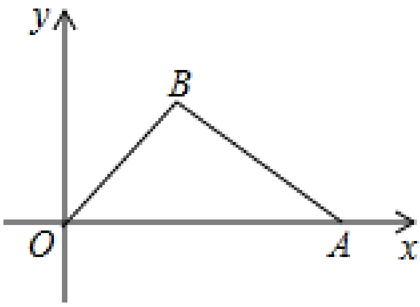


(1) (2)

graph: {"stem":{"pictures":[],"appliedproblems":{}},"substems":[{"substemid":"1","questionrelies":"","pictures":[{"picturename":"1000063718_Q_1.jpg","coordinates":{"A":"4.68,3.28","B":"3.11,0.55","C":"6.26,0.55","O":"4.68,0.55","E":"3.50,1.24","F":"5.86,1.24"},"collineations":{"0":"A###B###E","1":"A###C###F","2":"O###B###C","3":"O###E","4":"O###F"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},{"substemid":"2","questionrelies":"","pictures":[{"picturename":"1000063718_Q_1.jpg","coordinates":{"A":"4.68,3.28","B":"3.11,0.55","C":"6.26,0.55","O":"4.68,1.00"},"collineations":{"0":"A###B","1":"A###C","2":"C###B","3":"O###B","4":"O###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}}]}

NLP: EqualityRelation{BO=CO},PointOnLineRelation{point=O, line=BC, isConstant=false, extension=false},TriangleRelation:△ABC,PositionOfPoint2RegionRelation{point=O, region=EnclosedRegionRelation{name=ABC, closedShape=△ABC}, position=inner},TriangleRelation:△ABC,PositionOfPoint2RegionRelation{point=O, region=EnclosedRegionRelation{name=ABC, closedShape=△ABC}, position=outer},ProveConclusionRelation:[Proof: EqualityRelation{AB=AC}],ProveConclusionRelation:[Proof: EqualityRelation{AB=AC}],ProveConclusionRelation:[ConstantCorrectRelation [IExpressCompare=[AB=AC], identity_range=[], identity_judge_str=null, independent_var=[x], parameters=[AB, AC], conditionSet=null]]

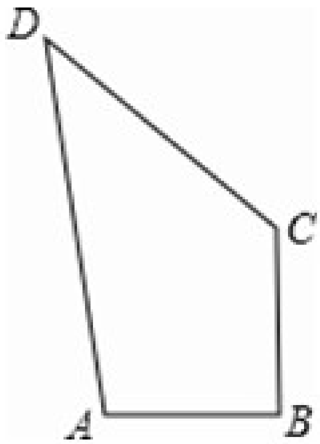
216, topic: as shown in the rectangular coordinate plane, O is the origin, the coordinates of the point A is (10,0), point B in the first quadrant, BO =5, $ \ sin \ angle BOA =\ frac { {3}} $ 5, seeking:% # # (1) B of the point coordinates;% # # (2) the value of cos∠BAO #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000060437_Q_1.jpg","coordinates":{"A":"10.00,0.00","B":"4.00,3.00","O":"0.00,0.00"},"collineations":{"0":"A###B","1":"A###O","2":"B###O"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: PointRelation: O (0,0), PointRelation: A (10,0), PointInDomRelation [point =B, local =FIRST_QUADRANT], EqualityRelation {BO =5}, EqualityRelation {sin (∠AOB) =(3/5)}, the coordinates PointRelation: B, evaluation (size) :(ExpressRelation: [key:] cos (∠BAO)), SolutionConclusionRelation {relation =coordinates PointRelation: B}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation : [key:] cos (∠BAO))}

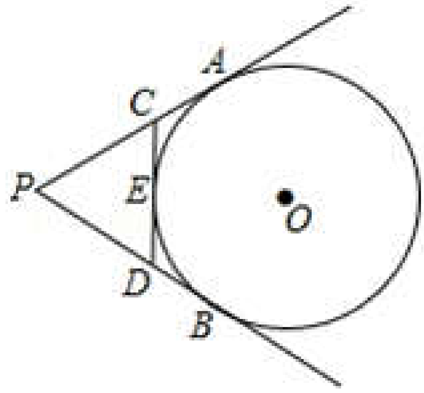
217, topic: FIG, $ quadrilateral ABCD in $, $ \ angle ABC =90 ^ \ circ $, $ AB =3 \ sqrt {2} $, $ BC =\ sqrt {7} $, $ DC =12 $, $ AD =13 $, $ quadrangle ABCD $ seeking area.



graph:
{"stem":{"pictures":[{"picturename":"1000027618_Q_1.jpg","coordinates":{"A":"-4.24,0.00","B":"0.00,0.00","C":"0.00,2.65","D":"-6.35,12.83"},"collineations":{"0":"B###C","1":"A###B","2":"D###C","3":"A###D"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: known conditions QuadrilateralRelation {quadrilateral =ABCD}, EqualityRelation {S_ABCD =v_0}, known conditions QuadrilateralRelation {quadrilateral =ABCD}, EqualityRelation {∠ABC =(1/2 * Pi)}, EqualityRelation {AB =3 * (2 ^ (1/2))}, EqualityRelation {BC =(7 ^ (1/2))}, EqualityRelation {CD =12}, EqualityRelation {AD =13}, evaluation (size) :(ExpressRelation: [key :] v_0), SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] S_ABCD)}

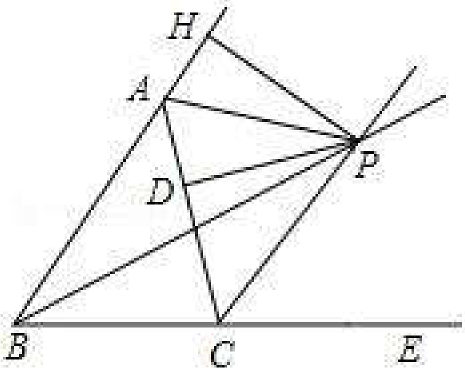
218, topic: FIG, PA, PB to cut $ ⊙O $ A, B points, CD $ ⊙O $ cut at point E, cross PA, PB in the C, D $ ⊙O $ if the radius is r. , $ △PCD $ equal to the circumference of 3r, evaluation $ \ tan∠APB $ a.



graph:
{"stem":{"pictures":[{"picturename":"1000025033.jpg","coordinates":{"A":"-2.22,3.33","B":"-2.22,-3.33","C":"-4.00,2.14","D":"-4.00,-2.14","E":"-4.00,0.00","P":"-7.21,0.00","O":"0.00,0.00"},"collineations":{"0":"P###C###A","1":"P###B###D","2":"D###E###C"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"A###B###E"}]}],"appliedproblems":{}},"substems":[]}

NLP: EqualityRelation{C_△CDP=v_0},LineContactCircleRelation{line=PA, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, contactPoint=Optional.of(A), outpoint=Optional.of(P)},LineContactCircleRelation{line=PB, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, contactPoint=Optional.of(B), outpoint=Optional.of(P)},LineContactCircleRelation{line=CD, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, contactPoint=Optional.of(E), outpoint=Optional.absent()},LineCrossRelation [crossPoint=Optional.of(C), iLine1=CD, iLine2=PA],LineCrossRelation [crossPoint=Optional.of(D), iLine1=CD, iLine2=PB],RadiusRelation{radius=null, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, length=Express:[r]},EqualityRelation{v_0=3*r},Calculation:(ExpressRelation:[key:]tan(∠CPD)),SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]tan(∠CPD))}

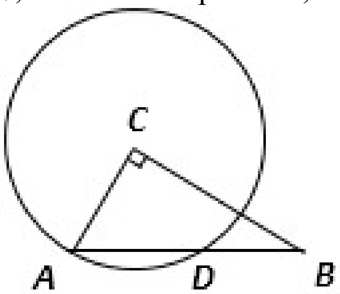
219, topic: FIG, △ABC, the bisector of the ∠ACB ∠ABC exterior angle bisectors intersect at a point P, PD⊥AC at point D, PH⊥BA at point H #% # (1) If the point. P to the straight line BA is 5cm, find the point P to the straight line distance BC;% # # (2) Proof: ∠HAC bisector point P of #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000031272_Q_1.jpg","coordinates":{"A":"-7.55,4.51","B":"-9.00,2.00","C":"-6.83,2.00","D":"-7.29,3.60","E":"-4.00,2.00","H":"-7.08,5.32","P":"-5.16,4.22"},"collineations":{"0":"H###A###B","1":"B###C###E","2":"A###D###C","3":"H###P","4":"A###P","5":"D###P","6":"B###P","7":"C###P"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: AngleBisectorRelation{line=BP,angle=∠ABC, angle1=∠ABP, angle2=∠CBP},AngleBisectorRelation{line=CP,angle=∠DCE, angle1=∠ECP, angle2=∠DCP},LineRoleRelation{Segment=M_1N_1, roleType=ANGULAR_BISECTOR},TriangleRelation:△ABC,LinePerpRelation{line1=PD, line2=AC, crossPoint=D},LinePerpRelation{line1=PH, line2=BA, crossPoint=H},PointToLineDistanceRelation{point=P, line=StraightLine[AB] analytic :y=k_BA*x+b_BA slope:null b:null isLinearFunction:false, distance=Express:[5]},距离,求距离：PointToLineDistanceRelation{point=P, line=BC, distance=null},AngleBisectorRelation{line=AP,angle=∠DAH, angle1=∠DAP, angle2=∠HAP},SolutionConclusionRelation{relation=距离,求距离：PointToLineDistanceRelation{point=P, line=BC, distance=null}},ProveConclusionRelation:[Proof: PointOnLineRelation{point=P, line=M_2N_2, isConstant=false, extension=false}]

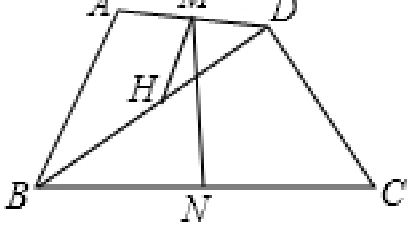
220, topic: FIG at $ Rt \ vartriangle ABC $ in, $ \ angle ACB ={{90} ^ {\ circ}} $, $ AC =3 $, $ BC =4 $, as the center point C , CA circle with radius AB intersect at points D, AD seek length.



graph:
{"stem":{"pictures":[{"picturename":"B687E3B2D92F4B6C90A95FFD40B6FECD.jpg","coordinates":{"A":"-12.35,2.32","B":"-7.35,2.32","C":"-11.00,5.00","D":"-9.65,2.32"},"collineations":{"0":"C###A","1":"A###B###D","2":"B###C"},"variable-equals":{},"circles":[{"center":"C","pointincircle":"A###D"}]}],"appliedproblems":{}},"substems":[]}

NLP: CircleCenterRelation{point=C, conic=Circle[⊙O_0]{center=O_0, analytic=(x-x_O_0)^2+(y-y_O_0)^2=r_O_0^2}},RadiusRelation{radius=CA, circle=Circle[⊙O_0]{center=O_0, analytic=(x-x_O_0)^2+(y-y_O_0)^2=r_O_0^2}, length=null},EqualityRelation{AD=v_1},RightTriangleRelation:RightTriangle:△ABC[Optional.of(C)],EqualityRelation{∠ACB=((1/2*Pi))},EqualityRelation{AC=3},EqualityRelation{BC=4},LineCrossCircleRelation{line=AB, circle=⊙O_0, crossPoints=[D], crossPointNum=1},Calculation:(ExpressRelation:[key:]v_1),SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]AD)}

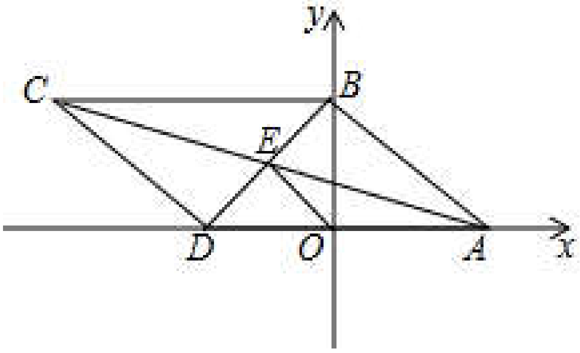
221, topic: FIG, quadrangle ABCD, a set of opposite sides AB =DC =4, another set of sides AD ≠ BC, BD and diagonal DC sides perpendicular to each other, M, N, H are AD, BC , the midpoint of the BD, and ∠ABD =30 °, requirements: #% # (1) MH long; #% # (2) MN longer #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000034215_Q_1.jpg","coordinates":{"A":"4.04,2.72","B":"2.77,0.00","C":"8.00,0.00","D":"6.28,2.46","M":"5.16,2.59","N":"5.38,0.00","H":"4.52,1.23"},"collineations":{"0":"B###A","1":"D###C","2":"M###N","3":"M###H","4":"A###M###D","5":"B###N###C","6":"B###H###D"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: Know:QuadrilateralRelation{quadrilateral=ABCD},LinePerpRelation{line1=BD, line2=DC, crossPoint=D},MiddlePointOfSegmentRelation{middlePoint=M,segment=AD},MiddlePointOfSegmentRelation{middlePoint=N,segment=BC},MiddlePointOfSegmentRelation{middlePoint=H,segment=BD},EqualityRelation{∠ABH=(1/6*Pi)},EqualityRelation{HM=v_0},Calculation:(ExpressRelation:[key:]v_0),EqualityRelation{MN=v_1},Calculation:(ExpressRelation:[key:]v_1),SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]HM)},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]MN)}

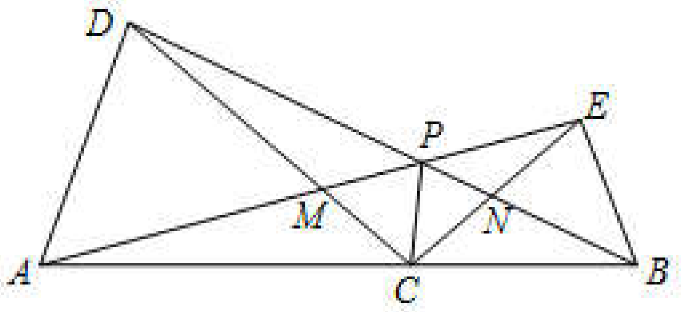
222, topic: As shown in the plane rectangular coordinate system, the edge AD parallelogram ABCD of the x-axis, y-axis point B $ AD // BC $, $ AD =BC $, AC, BD at point E , and mutually equally if $ OA =OB $, the coordinates of the point C is $ \ left ({- \ sqrt 3 - 1, \ sqrt 3} \ right) $ requirements:? #% # (1) point E coordinates;? #% # (2) $ S_ {quadrangular ABEO} $.



graph:
{"stem":{"pictures":[{"picturename":"1000006955_Q_1.jpg","coordinates":{"A":"3.00,0.00","B":"0.00,3.00","C":"-6.00,3.00","D":"-3.00,0.00","E":"-1.5,1.5","O":"0.00,0.00"},"collineations":{"0":"C###D","1":"D###A","2":"A###B","3":"C###B","4":"C###A###E","5":"D###B###E","6":"E###O"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: ParallelogramRelation {parallelogram =Parallelogram: ABCD}, LineCoincideRelation [iLine1 =AD, iLine2 =StraightLine [X] analytic: y =0 slope: 0 b: 0 isLinearFunction: false], EqualityRelation {AD =BC}, LineCrossRelation [crossPoint =Optional.of (E), iLine1 =AC, iLine2 =BD], EqualityRelation {AO =BO}, PointRelation: C (- (3 ^ (1/2)) - 1, (3 ^ (1/2))) coordinates PointRelation: E, known conditions QuadrilateralRelation {quadrilateral =ABEO}, evaluation (size) :(ExpressRelation: [key:] S_ (ABEO)), SolutionConclusionRelation {relation =coordinates PointRelation: E}, SolutionConclusionRelation {relation =seek value (size) :(ExpressRelation: [key:] S_ (ABEO))}

223, topic: FIG, C is an arbitrary point on a line segment AB (not the points A, B overlap), respectively, AC, BC is the ACD while for an isosceles triangle and an isosceles triangle BCE in the same side AB, CA =CD , CB =CE, ∠ACD with ∠BCE are acute and ∠ACD =∠BCE, cross-connected CD at point M AE, BD is connected to cross point N CE, AE and BD at point P, PC connection confirmation: #% # (1) △ACE≌ △DCB; #% # (2) ∠APC =∠BPC #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000072758_Q_1.jpg","coordinates":{"A":"-14.00,2.00","B":"-6.00,2.00","C":"-9.00,2.00","D":"-12.83,5.21","E":"-6.70,3.93","M":"-10.20,3.00","N":"-7.92,2.90","P":"-8.88,3.35"},"collineations":{"0":"A###D","1":"C###P","2":"B###E","3":"D###M###C","4":"E###N###C","5":"A###C###B","6":"D###P###N###B","7":"A###M###P###E"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

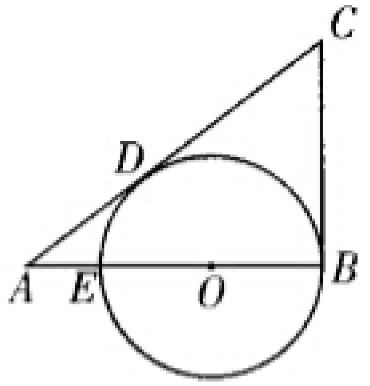
NLP: PointRelation:A,PointRelation:B,PointOnLineRelation{point=C, line=AB, isConstant=false, extension=false},EqualityRelation{AC=CD},EqualityRelation{BC=CE},Know:AcuteAngleRelation:∠ACM/ACUTE_ANGLE,Know:AcuteAngleRelation:∠BCN/ACUTE_ANGLE,EqualityRelation{∠ACM=∠BCN},LineCrossRelation [crossPoint=Optional.of(M), iLine1=AE, iLine2=CD],LineCrossRelation [crossPoint=Optional.of(N), iLine1=BD, iLine2=CE],LineCrossRelation [crossPoint=Optional.of(P), iLine1=AE, iLine2=BD],SegmentRelation:PC,ProveConclusionRelation:[Proof: TriangleCongRelation{triangleA=△ACE, triangleB=△DCB}],ProveConclusionRelation:[Proof: EqualityRelation{∠CPM=∠CPN}]

224, topic: As shown, P is a point outside ⊙O, PA ⊙O cut in A, PB ⊙O cut to B, BC diameter, Proof: . AC // OP #% # <img>

graph:
{"stem":{"pictures":[{"picturename":"1000083452_Q_1.jpg","coordinates":{"A":"-0.38,2.14","B":"0.09,-1.56","C":"1.34,2.36","P":"-3.84,-0.32","O":"0.71,0.40"},"collineations":{"0":"O###A","1":"O###P","2":"A###C","3":"A###P","4":"B###P","5":"B###O###C"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"C###A###B"}]}],"appliedproblems":{}},"substems":[]}

NLP: PointOutCircleRelation{point=Pcurve=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, points=[P]},LineContactCircleRelation{line=PA, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, contactPoint=Optional.of(A), outpoint=Optional.of(P)},LineContactCircleRelation{line=PB, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, contactPoint=Optional.of(B), outpoint=Optional.of(P)},DiameterRelation{diameter=BC, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, length=null},ProveConclusionRelation:[Proof: LineParallelRelation [iLine1=AC, iLine2=OP]]

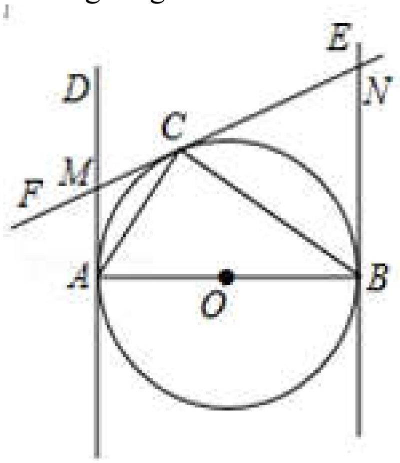
225, topic: FIG at $ △ABC $ is known $ ∠ABC =90 ° $, taken on the point E AB, to the diameter BE coincided with AC $ ⊙O $ tangent to points D, if $ AE =2cm $, $ AD =4cm $ #% # ① request $ ⊙ O $ BE diameter long;.?? #% # ② calculation $ △ABC $ area.



graph:
{"stem":{"pictures":[{"picturename":"C4102A2B0F8047D4AEBFCD994E5D7942.jpg","coordinates":{"A":"-14.00,5.00","B":"-6.00,5.00","C":"-6.00,11.00","D":"-10.80,7.40","E":"-12.00,5.00","O":"-9.00,5.00"},"collineations":{"0":"B###E###O###A","1":"A###D###C","2":"B###C"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"B###D###E"}]}],"appliedproblems":{}},"substems":[]}

NLP: DiameterRelation{diameter=BE, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, length=null},TriangleRelation:△ABC,EqualityRelation{∠CBO=(1/2*Pi)},PointOnLineRelation{point=E, line=AB, isConstant=false, extension=false},LineContactCircleRelation{line=AC, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, contactPoint=Optional.of(D), outpoint=Optional.absent()},EqualityRelation{AE=2},EqualityRelation{AD=4},EqualityRelation{BE=v_0},EqualityRelation{S_△ABC=v_1},Calculation:(ExpressRelation:[key:]v_1),SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]S_△ABC)}

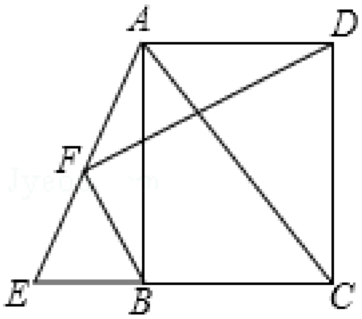
226, topic: FIG known AB is the diameter of $ ⊙O $, $ AB =2 $, AD and BE are two tangents to circle O, points A, B is a tangent point on the circle through the point C as $ ⊙O $ tangent CF, respectively cross AD, BE at points M, N, connected to AC, CB, $ ∠ABC =30 ° $ #% # (1) a long seek AM;.?? #% # (2) seeking long-MN.



graph:
{"stem":{"pictures":[{"picturename":"C43D89C512B94B54A08EBDB96A4C4749.jpg","coordinates":{"A":"-14.00,5.00","B":"-10.00,5.00","C":"-13.00,6.73","D":"-14.00,7.75","E":"-10.00,10.08","F":"-15.58,5.24","M":"-14.00,6.15","N":"-10.00,8.46","O":"-12.00,5.00"},"collineations":{"0":"B###O###A","1":"A###D###M","2":"A###C","3":"B###C","4":"B###N###E","5":"F###C###N###M"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"B###C###A"}]}],"appliedproblems":{}},"substems":[]}

NLP: PointOnCircleRelation{circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, points=[C]},DiameterRelation{diameter=AB, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, length=null},EqualityRelation{AB=2},LineContactCircleRelation{line=AD, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, contactPoint=Optional.of(A), outpoint=Optional.of(D)},LineContactCircleRelation{line=BE, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, contactPoint=Optional.of(B), outpoint=Optional.of(E)},LineContactCircleRelation{line=CF, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, contactPoint=Optional.of(C), outpoint=Optional.of(F)},LineCrossRelation [crossPoint=Optional.of(M), iLine1=CF, iLine2=AD],LineCrossRelation [crossPoint=Optional.of(N), iLine1=CF, iLine2=BE],SegmentRelation:AC,SegmentRelation:CB,EqualityRelation{∠CBO=(1/6*Pi)},EqualityRelation{AM=v_0},Calculation:(ExpressRelation:[key:]v_0),EqualityRelation{MN=v_1},Calculation:(ExpressRelation:[key:]v_1),SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]AM)},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]MN)}

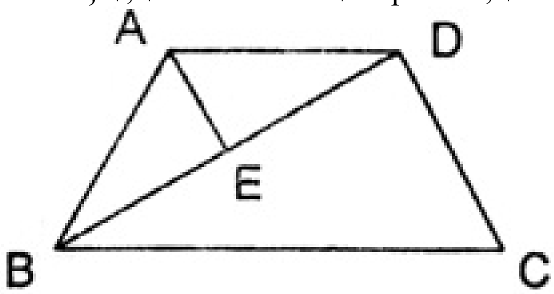
227, topic: Given: FIG, E is the edge CB rectangle ABCD bit extension line, CE =CA, F is the midpoint of the AE #% # (1) Prove:. BF⊥FD; #% # (2) If AB =8, AD =6, DF seeking long. #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000040721_Q_1.jpg","coordinates":{"A":"0.00,4.00","B":"0.00,0.00","C":"3.00,0.00","D":"3.00,4.00","E":"-2.00,0.00","F":"-1.00,2.00"},"collineations":{"0":"A###B","1":"E###B###C","2":"C###D","3":"D###A","4":"A###F###E","5":"F###D","6":"F###B","7":"A###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: RectangleRelation{rectangle=Rectangle:ABCD},PointOnLineRelation{point=E, line=CB, isConstant=false, extension=false},EqualityRelation{CE=AC},MiddlePointOfSegmentRelation{middlePoint=F,segment=AE},EqualityRelation{DF=v_0},EqualityRelation{AB=8},EqualityRelation{AD=6},Calculation:(ExpressRelation:[key:]v_0),ProveConclusionRelation:[Proof: LinePerpRelation{line1=BF, line2=FD, crossPoint=F}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]DF)}

228, topic: as shown in the trapezoid ABCD, $ AD \ parallel BC $, $ AB =DC =AD $, $ \ angle C ={60 ^ \ circ} $, $ AE \ bot BD $ to point E, $ AE =1 $, seeking the high trapezoid ABCD.



graph:
[{"variable-equals":{},"picturename":"1000001091_Q_1.jpg","collineations":{"5":"D###C","4":"B###C","3":"A###E","2":"A###D","1":"A###B","0":"E###D###B"},"coordinates":{"D":"0.11,5.05","E":"-6.97,1.12","A":"-9.23,5.19","B":"-14.04,-2.82","C":"4.69,-3.09"}}]

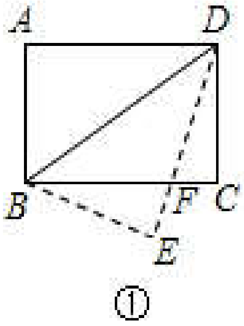
NLP: TrapezoidRelation{trapezoid=Trapezoid:ABCD, isRandomOrder:true},LineParallelRelation [iLine1=AD, iLine2=BC],MultiEqualityRelation [multiExpressCompare=AB=CD=AD, originExpressRelationList=[], keyWord=null, result=null],EqualityRelation{∠BCD=((1/3*Pi))},LinePerpRelation{line1=AE, line2=BD, crossPoint=E},EqualityRelation{AE=1},Calculation:(ExpressRelation:[key:]v_0),SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]v_0)}

229, topic: FIG, AB is $ ⊙O $ diameter, that is point D $ \ $ widehat on {AE}, and $ ∠BDE =∠CBE $, BD and AE at point F. ?% # # (1) Proof: BC is $ ⊙O $ tangent;% # # (2) When the BD bisects $ ∠ABE $, Proof: ? $ {{DE} ^ {2}} =DF \ cdot DB $;? #% # (3) in (2) are satisfied, the extension ED, BA at point P, when the $ PA =AO $, $ DE =2 $, and seek long PD radius of $ ⊙O $.

graph:
{"stem":{"pictures":[{"picturename":"1000025079.jpg","coordinates":{"A":"-2.00,0.00","B":"2.00,0.00","C":"2.00,4.55","D":"-1.50,1.32","E":"-0.26,1.98","F":"-1.00,1.13","O":"0.00,0.00"},"collineations":{"0":"A###F###E###C","1":"A###O###B","2":"B###C","3":"E###D","4":"D###F###B","5":"E###B"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"A###D###E###B"}]}],"appliedproblems":{}},"substems":[]}

NLP: DiameterRelation{diameter=AB, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, length=null},PointOnArcRelation{point=D, arc=type:MAJOR_ARC⌒AE},EqualityRelation{∠EDF=∠CBE},LineCrossRelation [crossPoint=Optional.of(F), iLine1=BD, iLine2=AE],AngleBisectorRelation{line=BD,angle=∠EBO, angle1=∠DBE, angle2=∠DBO},RadiusRelation{radius=M_0N_0, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, length=null},EqualityRelation{DP=v_1},LineCrossRelation [crossPoint=Optional.of(P), iLine1=ED, iLine2=BA],EqualityRelation{AP=AO},EqualityRelation{DE=2},Calculation:(ExpressRelation:[key:]v_1), Calculation:(ExpressRelation:[key:]M_0N_0),ProveConclusionRelation:[Proof: LineContactCircleRelation{line=BC, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, contactPoint=Optional.of(B), outpoint=Optional.of(C)}],ProveConclusionRelation:[Proof: EqualityRelation{((DE)^2)=DF*BD}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]DP)},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]M_0N_0)}

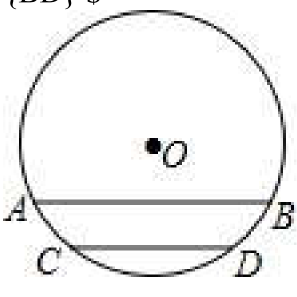
230, topic:.? ABCD in the rectangular sheet, $ AB =12 $, $ BC =16 $ #% # (1) a rectangular sheet folded along a BD, so that the point A falls at point E (FIG ①), BC and DE is provided at point F., a long seek BF;% # # (2) a rectangular sheet folded in FIG ② the points B and D overlap folds of GH, GH long seek #. % # <img>



graph:
{"stem":{"pictures":[],"appliedproblems":{}},"substems":[{"substemid":"1","questionrelies":"","pictures":[{"picturename":"1000008798_Q_1.jpg","coordinates":{"A":"0.00,12.00","B":"0.00,0.00","C":"16.00,0.00","D":"16.00,12.00","E":"11.52,-3.36","F":"12.50,0.00"},"collineations":{"0":"A###D","1":"B###C","2":"B###D","3":"B###E","4":"C###D","5":"F###D###E","6":"A###B"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},{"substemid":"2","questionrelies":"","pictures":[{"picturename":"1000008798_Q_2.jpg","coordinates":{"A":"0.00,12.00","B":"0.00,0.00","C":"16.00,0.00","D":"16.00,12.00","F":"4.48,15.36","G":"3.50,12.00","H":"12.50,0.00"},"collineations":{"0":"A###G###D","1":"F###D","2":"C###D","3":"H###D","4":"F###G","5":"B###H###C","6":"A###B","7":"G###H"},"variable-equals":{},"circles":[]}],"appliedproblems":{}}]}

NLP:
RectangleRelation{rectangle=Rectangle:ABCD},EqualityRelation{AB=12},EqualityRelation{BC=16},EqualityRelation{BF=v_0},RectangleRelation{rectangle=Rectangle:ABCD},Calculation:(ExpressRelation:[key:]v_0),EqualityRelation{GH=v_1},RectangleRelation{rectangle=Rectangle:ABCD},SymmetricRelation{preData=B,afterData=D,symmetric=StraightLine[GH] analytic :y=k_GH*x+b_GH slope:null b:null isLinearFunction:false,
pivot=},Calculation:(ExpressRelation:[key:]v_1),SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]BF)},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]GH)}

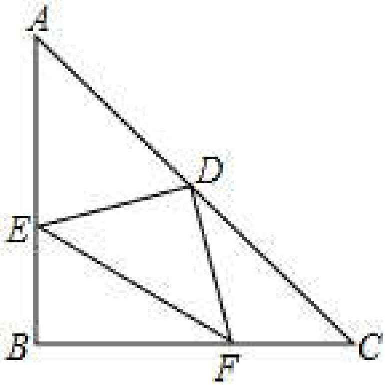
231, topic: FIG: $ ⊙O $ known, the confirmation string $ AB // CD $:. $ \ Widehat {AC} =\ widehat {BD} $



graph:
{"stem":{"pictures":[{"picturename":"D3850F4228214910914091A5213D3ED5.jpg","coordinates":{"A":"-15.46,4.00","B":"-8.54,4.00","C":"-14.65,3.00","D":"-9.35,3.00","O":"-12.00,6.00"},"collineations":{"0":"B###A","1":"C###D"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"C###D###A###B"}]}],"appliedproblems":{}},"substems":[]}

NLP: ChordOfCircleRelation{chord=AB, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, chordLength=null,straightLine=null},LineParallelRelation [iLine1=AB, iLine2=CD],ProveConclusionRelation:[Proof: EqualityRelation{⌒AC=⌒BD}]

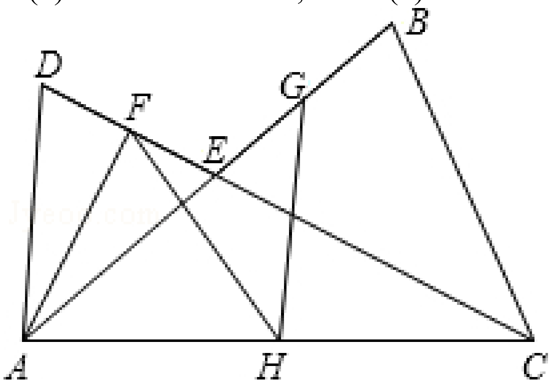
232, topic: as shown in the right isosceles triangle ABC, $ \angle ABC =90 ° $, point D is the midpoint of the AC, through point D as $ DE\perp DF $, DE cross AB at point E, DF cross BC at point F, if $ AE =4 $, $ FC =3 $, EF long seeking.



graph:
{"stem":{"pictures":[{"picturename":"1000006999_Q_1.jpg","coordinates":{"A":"0.00,7.00","B":"0.00,0.00","C":"7.00,0.00","D":"4.00,3.00","E":"0.00,3.00","F":"4.00,0.00"},"collineations":{"0":"E###D","1":"A###E###B","2":"E###F","3":"A###C###D","4":"F###B###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP:
EqualityRelation{EF=v_0},IsoscelesRightTriangleRelation:IsoscelesRightTriangle:IsoscelesTriangle:△ABC[Optional.of(B)][Optional.of(B)],EqualityRelation{∠EBF=(1/2*Pi)},MiddlePointOfSegmentRelation{middlePoint=D,segment=AC},LinePerpRelation{line1=DE, line2=DF, crossPoint=D},LineCrossRelation [crossPoint=Optional.of(E), iLine1=DE, iLine2=AB],LineCrossRelation [crossPoint=Optional.of(F), iLine1=DF, iLine2=BC],EqualityRelation{AE=4},EqualityRelation{CF=3},Calculation:(ExpressRelation:[key:]v_0),SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]EF)}

233, topic: FIG, AB, CD at point E, AD =AE, CB =CE, F, G, H are DE, BE, the midpoint of the AC #% # (1) Prove:. $AF\perp DE$; #% # (2) Proof: FH =GH #% # <img>.

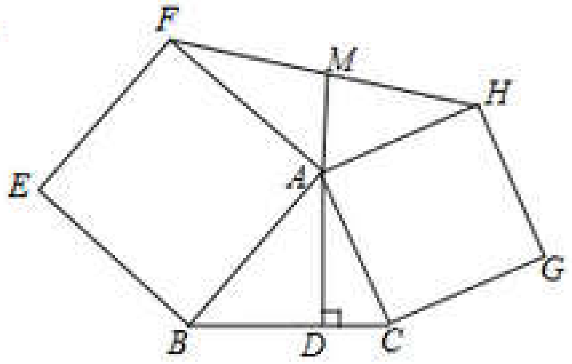


graph:
{"stem":{"pictures":[{"picturename":"1000031289_Q_1.jpg","coordinates":{"A":"-10.00,2.00","B":"-4.72,5.96","C":"-4.00,2.00","D":"-10.00,5.00","E":"-7.60,3.80","F":"-8.80,4.40","G":"-6.16,4.88","H":"-7.00,2.00"},"collineations":{"0":"A###D","1":"A###F","2":"A###E###G###B","3":"F###H","4":"H###G","5":"D###F###E###C","6":"B###C","7":"A###H###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: LineCrossRelation [crossPoint=Optional.of(E), iLine1=AB, iLine2=CD],EqualityRelation{AD=AE},EqualityRelation{BC=CE},MiddlePointOfSegmentRelation{middl

ePoint=F,segment=DE},MiddlePointOfSegmentRelation{middlePoint=G,segment=BE},MiddlePointOfSegmentRelation{middlePoint=H,segment=AC},ProveConclusionRelation:[Proof: LinePerpRelation{line1=AF, line2=DE, crossPoint=F}],ProveConclusionRelation:[Proof: EqualityRelation{FH=GH}]

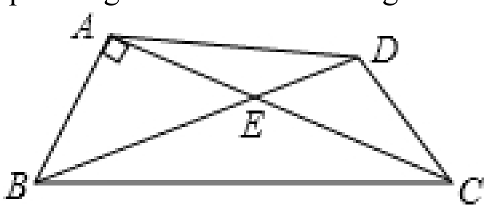
234, topic: FIG, respectively △ABC edges AB, AC and to one side for a square ABEF ACGH outside the triangle, M being the midpoint of the confirmation FH:.. MA⊥BC #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000040367_Q_1.jpg","coordinates":{"A":"-2.38,3.92","B":"-5.24,1.40","C":"-1.42,1.40","D":"-2.38,1.40","E":"-7.94,4.45","F":"-4.89,6.96","G":"1.09,2.36","H":"0.13,4.87","M":"-2.38,5.92"},"collineations":{"0":"A###C","1":"A###M###D","2":"A###B","3":"E###B","4":"C###D###B","5":"G###C","6":"G###H","7":"A###H","8":"A###F","9":"H###M###F","10":"E###F"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP:
TriangleRelation:△ABC,SquareRelation{square=Square:ABEF},SquareRelation{square=Square:ACGH},MiddlePointOfSegmentRelation{middlePoint=M,segment=FH},ProveConclusionRelation:[Proof: LinePerpRelation{line1=MA, line2=BC, crossPoint=D}]

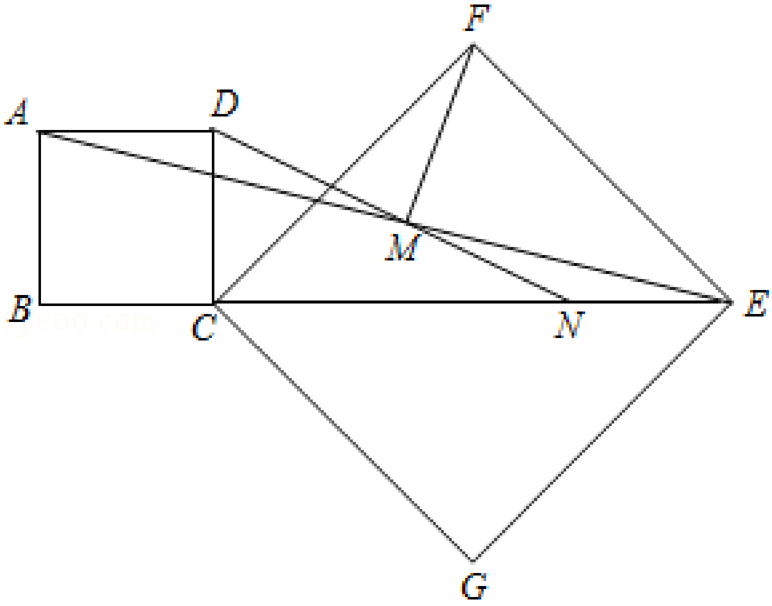
235, topic: As shown in the quadrilateral ABCD, the diagonals AC, BD at point E, ∠BAC =90 °, ∠CED =45 °, ∠DCE =30 °, $ DE =\ sqrt {2} $, $ BE =2 \ sqrt {2} $. CD seek length and the area of the quadrangle ABCD. #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"DB46FB658B7D49A2AD61864C7B43B7C1.jpg","coordinates":{"A":"-13.22,4.84","B":"-14.00,3.00","C":"-8.87,3.00","D":"-10.07,4.59","E":"-11.38,4.06"},"collineations":{"0":"B###A","1":"A###E###C","2":"A###D","3":"C###B","4":"B###D###E","5":"C###D"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: EqualityRelation {CD =v_0}, known conditions QuadrilateralRelation {quadrilateral =ABCD}, EqualityRelation {S_ABCD =v_1}, known conditions QuadrilateralRelation {quadrilateral =ABCD}, LineCrossRelation [crossPoint =Optional.of (E), iLine1 =AC , iLine2 =BD], EqualityRelation {∠BAE =(1/2 * Pi)}, EqualityRelation {∠CED =(1/4 * Pi)}, EqualityRelation {∠DCE =(1/6 * Pi)}, EqualityRelation { DE =(2 ^ (1/2))}, EqualityRelation {BE =2 * (2 ^ (1/2))}, evaluation (size) :(ExpressRelation: [key:] v_0), evaluation (size) :(ExpressRelation: [key:] v_1), SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] CD)}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] S_ABCD)}

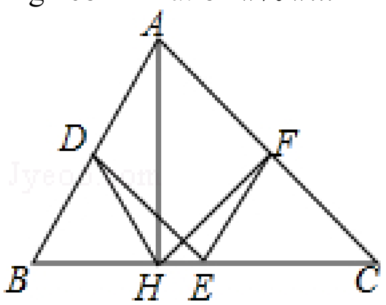
236, topic: FIG square CGEF CE diagonal extension line of the side BC of the square ABCD (CG＞BC), M is the midpoint of the line segment AE, the DM CE extension lines cross in N #% #. (1) Proof: AD =NE #% # (2) Proof: ① DM =MF; ② DM⊥MF #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000041542_Q_1.jpg","coordinates":{"A":"-9.00,5.00","B":"-9.00,3.00","C":"-7.00,3.00","D":"-7.00,5.00","E":"-1.00,3.00","F":"-4.00,6.00","G":"-4.00,0.00","M":"-5.00,4.00","N":"-3.00,3.00"},"collineations":{"0":"A###B","1":"A###D","2":"B###C###N###E","3":"D###C","4":"F###E","5":"A###M###E","6":"D###M###N","7":"F###C","8":"F###M","9":"C###G","10":"G###E"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP:
InequalityRelation{CG>BC},MiddlePointOfSegmentRelation{middlePoint=M,segment=AE},LineCrossRelation [crossPoint=Optional.of(N), iLine1=DM, iLine2=CE],ProveConclusionRelation:[Proof: EqualityRelation{AD=EN}]

237, topic: Given: As shown in the △ABC, D, E, F, respectively, is the midpoint of each side, the AH is high confirmation #% #:.. ∠DHF =∠DEF #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000081731_Q_1.jpg","coordinates":{"A":"0.00,3.00","B":"-2.00,0.0

0","C":"3.00,0.00","D":"-1.00,1.50","E":"0.50,0.00","F":"1.50,1.50","H":"0.00,0.00"},"collineations":{"0":"A###D###B","1":"A###F###C","2":"B###H###E###C","3":"D###H","4":"D###E","5":"F###H","6":"F###E","7":"A###H"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleRelation:△ABC,PointRelation:D,LinePerpRelation{line1=AH, line2=BH, crossPoint=H},ProveConclusionRelation:[Proof: EqualityRelation{∠DHF=∠DEF}]

238, topic: As shown, the conventional length of a side of the square sheet $ 4 $ $ $ ABCD, the point P $ $ $ square edge of the AD point $ ($ A $ does not point, point coincides $ D $) , a square sheet is folded, so that the point P $ B $ $ $ falls at a point $ C $ $ G $ fall at the PG $ $ $ deposit on the DC $ $ H $, $ fold to $ EF, connected .? BP, BH #% # (1) Proof: $ \ angle APB =\ angle BPH $; #% # (2) when the point $ P $ on side $ the AD $ moves, Proof: ? $ \ vartriangle PDH $ perimeter is a constant value;? #% # (3) takes a minimum value when the length of $ bE + CF $, find the AP $ $ long.

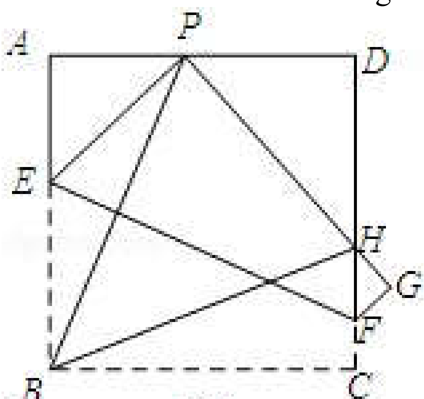
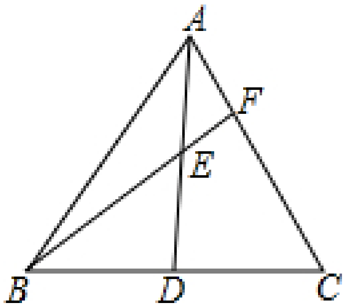


图1

graph: {"stem":{"pictures":[{"picturename":"1000027628_Q_1.jpg","coordinates":{"A":"-4.00,4.00","B":"-4.00,0.00","C":"0.00,0.00","D":"0.00,4.00","E":"-4.00,2.43","P":"-2.14,4.00","F":"0.00,0.57","G":"0.24,1.09","H":"0.00,1.38"},"collineations":{"0":"A###E###B","1":"A###P###D","2":"D###H###F###C","3":"P###H###G","4":"B###C","5":"B###P","6":"B###H","7":"P###E","8":"E###F","9":"F###G"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: PointRelation:A,PointRelation:D,SquareRelation{square=Square:ABCD},PointCoincidenceRelation{point1=B, point2=P},PointCoincidenceRelation{point1=C, point2=G},LineCrossRelation [crossPoint=Optional.of(H), iLine1=PG, iLine2=DC],SegmentRelation:EF,SegmentRelation:BP,SegmentRelation:BH,EqualityRelation{C_△DHP=v_0},PointOnLineRelation{point=P, line=AD, isConstant=false, extension=false},EqualityRelation{AP=v_1},Calculation:(ExpressRelation:[key:]v_1),ProveConclusionRelation:[Proof: EqualityRelation{∠APB=∠BPH}],ProveConclusionRelation:[Proof: ConstantValueRelation [constantObject=Express:[v_0]]],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]AP)}

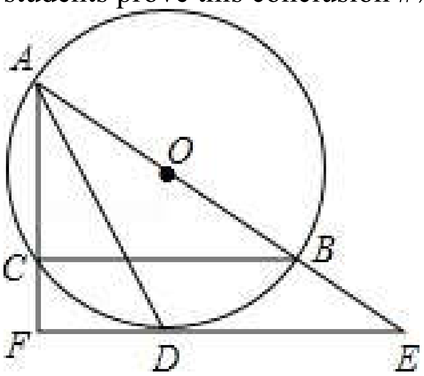
239, topic: As shown in △ABC, D is a point on the side BC, known $ \ frac {BD} {DC} =\ frac {5} {3} $, E is the midpoint of AD, BE extended AC to AC F, seeking $ \ {BE} {EF} $ value of frac. #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000062208_Q_1.jpg","coordinates":{"A":"-3.73,6.43","B":"-7.99,0.00","C":"0.00,0.00","D":"-3.97,0.00","E":"-3.85,3.21","F":"-2.48,4.27"},"collineations":{"0":"A###B","1":"B###D###C","2":"A###F###C","3":"A###E###D","4":"B###E###F"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleRelation:△ABC,PointOnLineRelation{point=D, line=BC, isConstant=false, extension=false},EqualityRelation{((BD)/(CD))=(5/3)},MiddlePointOfSegmentRelation{middlePoint=E,segment=AD},LineCrossRelation [crossPoint=Optional.of(F), iLine1=BE, iLine2=AC],Calculation:(ExpressRelation:[key:]((BE)/(EF))),SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]((BE)/(EF)))}

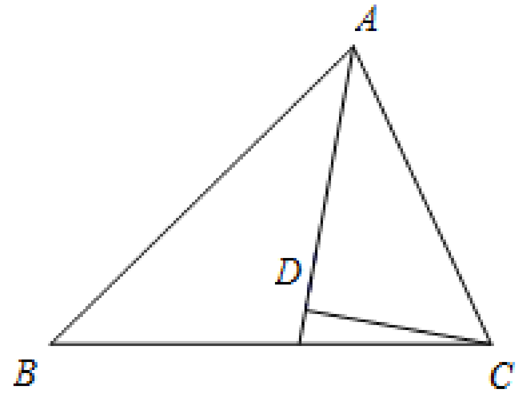
240, topic: FIG, ⊙O is the circumcircle of △ABC, AB diameter, ∠BAC bisector cross ⊙O at points D, D are the tangent points over the cross-AB, AC extended line at points E, F . #% # (1) Proof: AF⊥EF #% # (2) Xiaoqiang students through inquiry found that:.. AF + CF =AB, would you please help Xiaoqiang students prove this conclusion #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000008238_Q_1.jpg","coordinates":{"A":"-2.00,3.00","B":"2.00,0.00","C":"-2.00,0.00","D":"0.00,-1.00","E":"3.33,-1.00","F":"-2.00,-1.00","O":"0.00,1.50"},"collineations":{"0":"B###C","1":"A###D","2":"A###O###B###E","3":"F###D###E","4":"A###C###F"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"A###B###C###D"}]}],"appliedproblems":{}},"substems":[]}

NLP: AngleBisectorRelation{line=AD,angle=∠CAO, angle1=∠CAD, angle2=∠DAO},InscribedShapeOfCircleRelation{closedShape=△ABC, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}},DiameterRelation{diameter=AB, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, length=null},ProveConclusionRelation:[Proof: LinePerpRelation{line1=AF, line2=EF, crossPoint=F}]

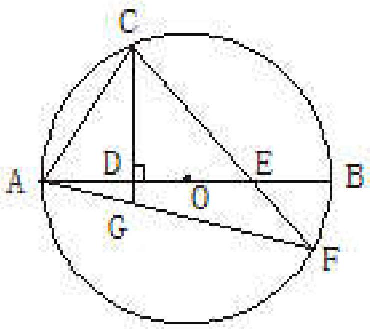
241, topic: FIG, △ABC in, AD equally ∠BAC, CD⊥AD in D, AB＞AC, Proof: ∠ACD＞∠ABC #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000051288_Q_1.jpg","coordinates":{"A":"-4.00,6.00","B":"-7.00,3.05","C":"-2.64,3.05","D":"-4.48,3.39"},"collineations":{"0":"A###B","1":"A###C","2":"C###B","3":"D###C","4":"D###A"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleRelation:△ABC,AngleBisectorRelation{line=AD,angle=∠BAC, angle1=∠BAD, angle2=∠CAD},LinePerpRelation{line1=CD, line2=AD, crossPoint=D},InequalityRelation{AB>AC},ProveConclusionRelation:[Proof: InequalityRelation{∠ACD>∠ABC}]

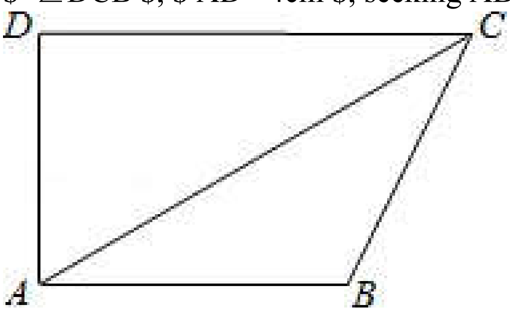
242, topic: is known, as shown, AB is $ ⊙O $ diameter, C is the point ⊙O, connected to AC, a straight line through the point C in $ CD⊥AB $ D ($ AD <DB $), point is an arbitrary point E (point D, B excluding) the DB, the straight line CE ⊙O cross at point F, AF connection line CD at point G. (1) Proof: $ {{AC} ^ {2}} =AG \ cdot AF $; #% # (2) if the point E is AD (except point A) at any point, the above conclusions are still valid? If established, Draw graphics and give proof; if not established, please explain why.



graph:
{"stem":{"pictures":[{"picturename":"1000026043_Q_1.jpg","coordinates":{"A":"-6.00,0.00","B":"6.00,0.00","C":"-1.50,5.81","D":"-1.50,0.00","E":"2.17,0.00","F":"4.60,-3.85","G":"-1.50,-1.63","O":"0.00,0.00"},"collineations":{"0":"F###C###E","1":"B###O###D###A###E","2":"D###G###C","3":"C###A","4":"G###F###A"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"C###F###A###B"}]}],"appliedproblems":{}},"substems":[{"substemid":"1","questionrelies":"2","pictures":[],"appliedproblems":{}},{"substemid":"2","questionrelies":"1","pictures":[],"appliedproblems":{}}]}

NLP: PointRelation:D,PointRelation:B,DiameterRelation{diameter=AB, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, length=null},PointOnCircleRelation{circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, points=[C]},SegmentRelation:AC,LinePerpRelation{line1=CD, line2=AB, crossPoint=D},PointOnLineRelation{point=E, line=DB, isConstant=false, extension=false},LineCrossCircleRelation{line=CE, circle=⊙O, crossPoints=[F], crossPointNum=1},LineCrossRelation [crossPoint=Optional.of(G), iLine1=AF, iLine2=CD],PointRelation:A,PointOnLineRelation{point=E, line=AD, isConstant=false, extension=false},ProveConclusionRelation:[Proof: EqualityRelation{((AC)^2)=AG*AF}]

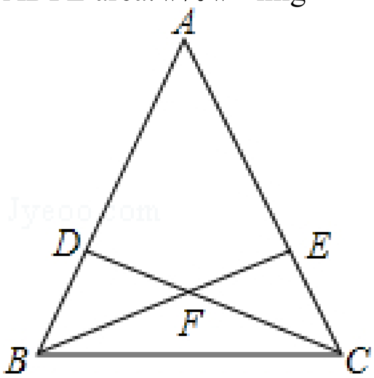
243, topic: the quadrilateral ABCD, $ AB∕∕CD $, $ ∠D =90 ° $, $ ∠DCA =30 ° $, CA bisecting $ ∠DCB $, $ AD =4cm $, seeking AB length.



graph:
{"stem":{"pictures":[{"picturename":"1000026616_Q_1.jpg","coordinates":{"A":"-3.85,-1.40","B":"2.16,-1.39","C":"5.16,3.81","D":"-3.85,3.80"},"collineations":{"0":"A###B","1":"A###D","2":"A###C","3":"B###C","4":"C###D"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: EqualityRelation {AB =v_0}, known conditions QuadrilateralRelation {quadrilateral =ABCD}, LineParallelRelation [iLine1 =AB, iLine2 =CD], EqualityRelation {∠ADC =(1/2 * Pi)}, EqualityRelation {∠ACD =(1/6 * Pi)}, AngleBisectorRelation {line =CA, angle =∠BCD, angle1 =∠ACB, angle2 =∠ACD}, EqualityRelation {AD =4}, evaluation (size) :(ExpressRelation: [key:] v_0), SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] AB)}

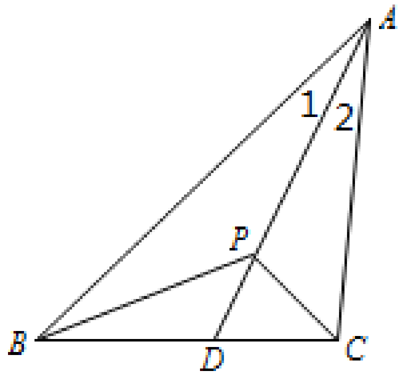
244, topic: As shown in the △ABC, points D, E, respectively, in the AB, AC, and BE and CD meet at F. △BDF known in the area of 10, an area of △BCF is 20, the area of △CEF is 16, a quadrangular seeking area ADFE area. #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"EEAB10F6444B47028439D7F839FADD1B.jpg","coordinates":{"A":"-12.00,8.00","B":"-14.00,3.00","C":"-10.00,3.00","D":"-13.34,4.65","E":"-10.67,4.68","F":"-12.02,4.00"},"collineations":{"0":"B###D###A","1":"A###E###C","2":"B###C","3":"B###E###F","4":"C###F###D"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleRelation:△ABC,PointOnLineRelation{point=D, line=AB, isConstant=false, extension=false},PointOnLineRelation{point=E, line=AC, isConstant=false, extension=false},LineCrossRelation [crossPoint=Optional.of(F), iLine1=CD, iLine2=BE],EqualityRelation{S_△BDF=10},EqualityRelation{S_△BCF=20},EqualityRelation{S_△CEF=16}

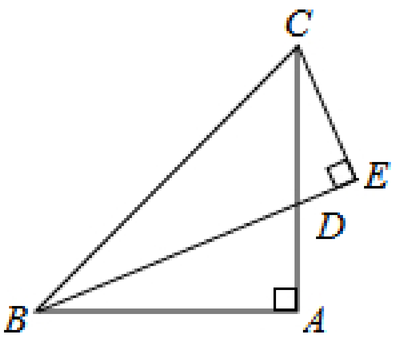
245, topic: As shown in the △ABC, $ AB＞AC $, AD is the bisector ∠BAC, P is AD verify point:. $ AB-AC＞PB-PC $ #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"EFEF89333CC14ECE978A33D52A48288E.jpg","coordinates":{"A":"-11.00,7.00","B":"-14.00,3.00","C":"-10.00,3.00","D":"-11.81,3.00","P":"-11.51,4.49"},"collineations":{"0":"B###A","1":"A###C","2":"A###D###P","3":"B###D###C","4":"B###P","5":"C###P"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleRelation:△ABC,InequalityRelation{AB>AC},AngleBisectorRelation{line=AD,angle=∠BAC, angle1=∠BAD, angle2=∠CAD},PointOnLineRelation{point=P, line=AD, isConstant=false, extension=false},ProveConclusionRelation:[Proof: InequalityRelation{AB-AC>BP-CP}]

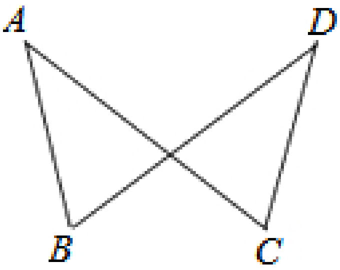
246, topic: FIG known, ∠BAC =90 °, AB =AC, BD is ∠ABC bisector and cross CE⊥BD extension line BD at point E. Proof: BD =2CE #% # <. img>



graph:
{"stem":{"pictures":[{"picturename":"F04029B98CA6483FB0FCE64B728FC0DC.jpg","coordinates":{"A":"-10.00,3.00","B":"-14.00,3.00","C":"-10.00,7.00","D":"-10.00,4.66","E":"-9.17,5.00"},"collineations":{"0":"D###C###A","1":"B###A","2":"B###C","3":"B###D###E","4":"C###E"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: EqualityRelation{∠BAD=(1/2*Pi)},EqualityRelation{AB=AC},AngleBisectorRelation{line=BD,angle=∠ABC, angle1=∠ABD, angle2=∠CBD},LinePerpRelation{line1=CE, line2=BD, crossPoint=E},LineCrossRelation[crossPoint=Optional.of(E), iLine1=CE, iLine2=BD],ProveConclusionRelation:[Proof: EqualityRelation{BD=2*CE}]

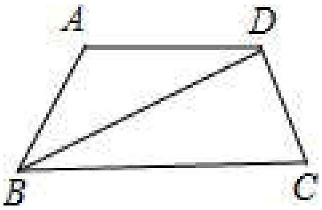
247, topic:. As shown, AB =DC, DB =AC #% # confirmation: ∠ABD =∠DCA #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000072656_Q_1.jpg","coordinates":{"A":"-11.00,8.00","B":"-9.00,4.00","C":"-6.00,4.00","D":"-4.00,8.00"},"collineations":{"0":"A###B","1":"A###C","2":"B###D","3":"D###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: EqualityRelation{AB=CD},EqualityRelation{BD=AC},ProveConclusionRelation:[Proof: EqualityRelation{∠ABD=∠ACD}]

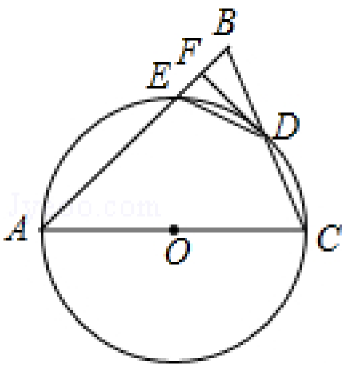
248, topic:.? As shown, the trapezoidal $ ABCD $, $ AD∥BC $, $ AB =CD =AD $, $ BD⊥CD $ #% # (1) evaluation $ \ sin ∠DBC $ of ;? #% # (2) If the BC $ $ length $ 4cm $, $ seeking trapezoidal area ABCD $.



graph:
{"stem":{"pictures":[{"picturename":"1000007551_Q_1.jpg","coordinates":{"A":"1.00,1.73","D":"3.00,1.73","C":"4.00,0.00","B":"0.00,0.00"},"collineations":{"0":"B###A","1":"D###A","2":"D###B","3":"D###C","4":"B###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: TrapezoidRelation{trapezoid=Trapezoid:ABCD, isRandomOrder:true},LineParallelRelation [iLine1=AD, iLine2=BC],MultiEqualityRelation [multiExpressCompare=AB=CD=AD, originExpressRelationList=[], keyWord=null, result=null],LinePerpRelation{line1=BD, line2=CD, crossPoint=D},Calculation:(ExpressRelation:[key:]sin(∠CBD)),TrapezoidRelation{trapezoid=Trapezoid:ABCD, isRandomOrder:true},EqualityRelation{S_ABCD=v_0},EqualityRelation{BC=4},Calculation:(ExpressRelation:[key:]v_0),SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]sin(∠CBD))},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]S_ABCD)}

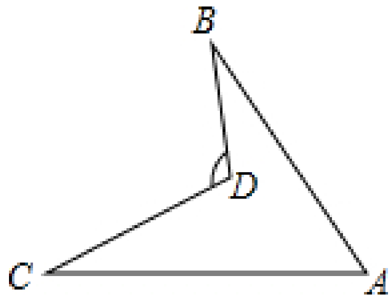
249, topic: As shown in the △ABC, AB =AC, the AC diameter of ⊙O BC at point D, at point AB cross E, through point D as DF⊥AB, pedal is F, DE connector . #% # (1) Proof: DF straight and tangential ⊙O;% # # (2) if AE =7, BC =6, AC seeking long #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000040841_Q_1.jpg","coordinates":{"A":"-2.09,0.00","B":"0.92,2.90","C":"2.09,0.00","D":"1.50,1.45","E":"0.08,2.09","F":"0.50,2.50","O":"0.00,0.00"},"collineations":{"0":"A###E###F###B","1":"B###D###C","2":"C###O###A","3":"D###E","4":"D###F"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"A###C###D###E"}]}],"appliedproblems":{}},"substems":[]}

NLP: DiameterRelation{diameter=AC, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, length=null},TriangleRelation:△ABC,EqualityRelation{AB=AC},LineCrossCircleRelation{line=BC, circle=⊙O, crossPoints=[D], crossPointNum=1},LineCrossCircleRelation{line=AB, circle=⊙O, crossPoints=[E], crossPointNum=1},LinePerpRelation{line1=DF, line2=AB, crossPoint=F},SegmentRelation:DE,EqualityRelation{AC=v_0},EqualityRelation{AE=7},EqualityRelation{BC=6},Calculation:(ExpressRelation:[key:]v_0),ProveConclusionRelation:[Proof: LineContactCircleRelation{line=DF, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, contactPoint=Optional.of(D), outpoint=Optional.of(F)}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]AC)}

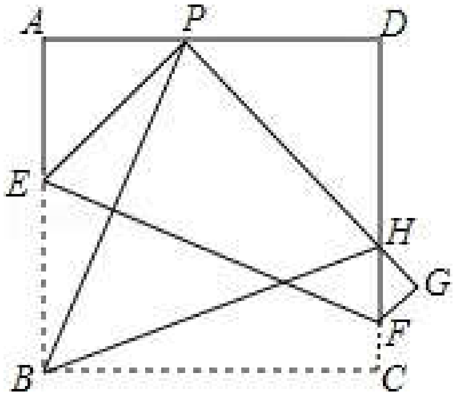
250, topic: FIG Proof: #% # (1) ∠BDC＞∠A; #% # (2) ∠BDC =∠B + ∠C + ∠A #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000073065_Q_1.jpg","coordinates":{"A":"5.00,0.00","B":"2.00,3.00","C":"0.00,0.00","D":"2.00,1.49"},"collineations":{"0":"B###A","1":"B###D","2":"C###D","3":"C###A"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: ProveConclusionRelation: [Proof: InequalityRelation {∠BDC＞∠BAC}], ProveConclusionRelation: [Proof: EqualityRelation {∠BDC =∠ABD + ∠ACD + ∠BAC}]

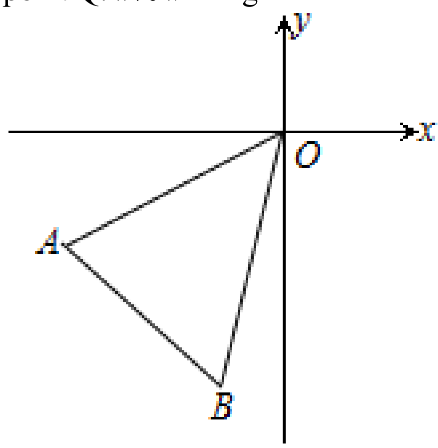
251, topic: as shown, a square of a conventional sheet ABCD 4, the point P to a point (not the point A, point D coincides), the edge of the folded square sheet the AD, so that point B falls P, at point C falls G, PG DC to AC H, crease is EF, the coupling BP, BH #% # (1) Prove:. ∠APB =∠BPH; #% # (2) Proof: AP + HC =PH;. #% # (3) when AP =1, the required length of PH #% # <img>



graph:
{"substems":[{},{"questionrelies":"1"},{"questionrelies":"2"}],"stem":{"pictures":[{"variable-equals":{},"picturename":"1000001148_Q_1.jpg","collineations":{"9":"B###C","8":"F###G","7":"B###H","6":"P###B","5":"F###E","4":"P###E","3":"D###H###F###C","2":"P###H###G","1":"A###E###B","0":"A###P###D"},"coordinates":{"D":"6,6","E":"0,3.33","F":"6,1.33","G":"6.8,2.4","A":"0,6","B":"0,0","C":"6,0","H":"6,3","P":"2,6"}}]}}

NLP: PointRelation:A,PointRelation:D,PointOnLineRelation{point=P, line=AD, isConstant=false, extension=false},SquareRelation{square=Square:ABCD},PointCoincidenceRelation{point1=B, point2=P},PointCoincidenceRelation{point1=C, point2=G},LineCrossRelation [crossPoint=Optional.of(H), iLine1=PG, iLine2=DC],SegmentRelation:EF,SegmentRelation:BH,EqualityRelation{HP=v_0},EqualityRelation{AP=1},Calculation:(ExpressRelation:[key:]v_0),ProveConclusionRelation:[Proof: EqualityRelation{∠APB=∠BPH}],ProveConclusionRelation:[Proof: EqualityRelation{AP+CH=HP}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:] HP)}

252, topic: As shown, the plane rectangular coordinate system, A (-3, -2), B (-1, -4) #% # (1) find $ {{S} _ {\ vartriangle OAB}} $; #% # coordinates (2) extend cross-AB y-axis at point P, the point P is required; #% # (3) in the y-axis point Q to a, B, O, Q is the area of the rectangle vertices 6 , find the coordinates of the point Q. #% # <img>

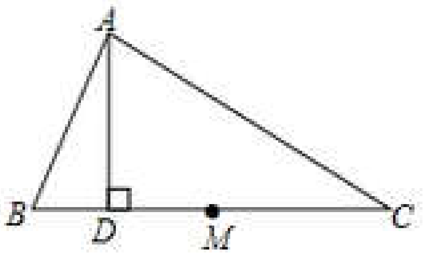


graph:
{"stem":{"pictures":[{"picturename":"1000080427_Q_1.jpg","coordinates":{"A":"-3.00,-2.00","B":"-1.00,-4.00","O":"0.00,0.00"},"collineations":{"0":"A###O","1":"A###B","2":"O###B"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: CoorSysTypeRelation [name =xOy, types =Cartesian coordinate system], PointRelation: A (-3, -2), PointRelation: B (-1, -4), evaluation (size) :(ExpressRelation: [key:] S_ △ABO)), the coordinates

PointRelation: P, PointOnLineRelation {point =Q, line =StraightLine [Y] analytic: x =0 slope: b: isLinearFunction: false, isConstant =false, extension =false}, known conditions QuadrilateralRelation { quadrilateral =ABOQ}, EqualityRelation {S_ABOQ =6}, the coordinates PointRelation: Q, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] S_ △ABO))}, SolutionConclusionRelation {relation =coordinates PointRelation: P} , SolutionConclusionRelation {relation =coordinates PointRelation: Q}

253, topic: As shown in the triangle ABC, $ \ angle B =2 \ angle C $, AD is the height of the triangle, point M is the midpoint of the side BC Proof: $ DM =\ frac {1} {2 } AB $. #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000040694_Q_1.jpg","coordinates":{"A":"-9.03,4.35","B":"-11.00,2.00","C":"-4.00,2.00","D":"-9.03,2.00","M":"-7.50,2.00"},"collineations":{"0":"A###D","1":"A###B","2":"A###C","3":"B###D###M###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleRelation:△ABC,EqualityRelation{∠ABD=2*∠ACM},MiddlePointOfSegmentRelation{middlePoint=M,segment=BC},LinePerpRelation{line1=AD, line2=BD, crossPoint=D},ProveConclusionRelation:[Proof: EqualityRelation{DM=(1/2)*AB}]

254, topic: FIG., It is known in the △ABC, AB =AC, the straight line m passing point A #% # (1) in FIG. 1, if ∠BAC =90 °, BD⊥m, CE⊥m,. pedal points respectively D, E Prove:.. △ABD≌ △CAE #% # (2) in FIG. 2, if ∠BAC =90 °, P is a point on the m, and AP =10cm, △PAC, △PAB area were $ 60c {{m} ^ {2}} $ and $ 30c {{m} ^ {2}} $, the area of ABC is seeking △ . #% # (3) in FIG. 3, if D, two points on E m (D, a, E do not overlap each three), F is the point bisecting line ∠BAC, and △ABF and △ACF are equilateral triangle connecting BD, CE. If ∠BDA =∠AEC =∠BAC, △DEF test determines the shape, and prove your conclusion. #% # <img>

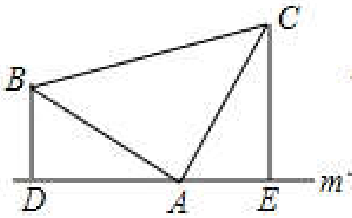


图 1

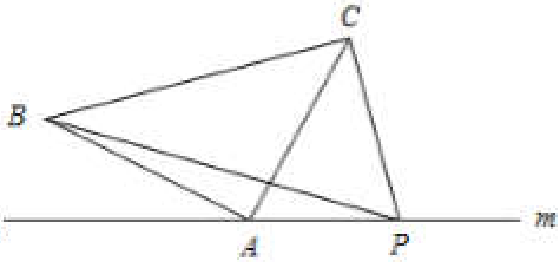


图 2

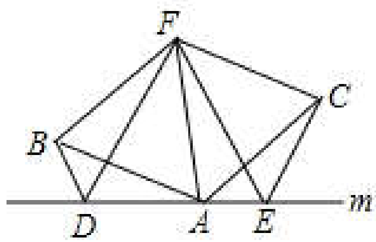


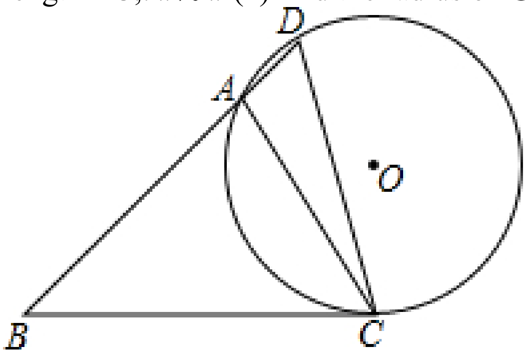
图 3

graph:
{"stem":{"pictures":[],"appliedproblems":{}},"substems":[{"pictures":[{"picturename":"1000034354_Q_1.jpg","coordinates":{"A":"-5.61,5.19","B":"-8.23,6.56","C":"-4.23,7.81","D":"-8.23,5.19","E":"-4.23,5.19"},"collineations":{"0":"B###A","1":"B###D","2":"B###C","3":"D###A###E","4":"A###C","5":"C###E"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},{"pictures":[{"picturename":"1000034354_Q_2.jpg","coordinates":{"A":"-5.56,5.19","B":"-8.55,6.69","C":"-4.05,8.18","P":"-3.06,5.19"},"collineations":{"0":"B###A","1":"B###P","2":"B###C","3":"A###P","4":"A###C","5":"C###P"},"variable-equals":{},"circles":[]

}],"appliedproblems":{}},{"pictures":[{"picturename":"1000034354_Q_3.jpg","coordinates":{"A":"-4.07,3.65","B":"-6.98,4.69","C":"-1.73,5.64","D":"-6.38,3.65","E":"-2.88,3.65","F":"-4.63,6.68"},"collineations":{"0":"F###B","1":"F###D","2":"F###A","3":"F###E","4":"F###C","5":"C###E","6":"A###B","7":"D###B","8":"D###A###E","9":"A###C","10":"A###B"},"variable-equals":{},"circles":[]}],"appliedproblems":{}}]
}

NLP: TriangleRelation:△ABC,EqualityRelation{AB=AC},PointOnLineRelation{point=A, line=StraightLine[m] analytic :y=k_m*x+b_m slope:null b:null isLinearFunction:false, isConstant=false, extension=false},(ExpressRelation:[key:]1),EqualityRelation{∠BAC=(1/2*Pi)},LinePerpRelation{line1=AD, line2=BD, crossPoint=D},LinePerpRelation{line1=DE, line2=CE, crossPoint=E},EqualityRelation{S_△ABC=v_0},(ExpressRelation:[key:]2),EqualityRelation{∠BAC=(1/2*Pi)},PointOnLineRelation{point=P, line=StraightLine[m] analytic :y=k_m*x+b_m slope:null b:null isLinearFunction:false, isConstant=false, extension=false},EqualityRelation{AP=10},EqualityRelation{S_△ACP=60*c},EqualityRelation{S_△ABP=30*c},Calculation:(ExpressRelation:[key:]v_0),AngleBisectorRelation{line=M_1N_1,angle=∠BAC, angle1=∠BAM_1, angle2=∠CAM_1},NegativeRelation{relation=PointCoincidenceRelation{point1=D, point2=A}},NegativeRelation{relation=PointCoincidenceRelation{point1=D, point2=E}},NegativeRelation{relation=PointCoincidenceRelation{point1=A, point2=E}},(ExpressRelation:[key:]3),PointOnLineRelation{point=D, line=StraightLine[m] analytic :y=k_m*x+b_m slope:null b:null isLinearFunction:false, isConstant=false, extension=false},PointOnLineRelation{point=E, line=StraightLine[m] analytic :y=k_m*x+b_m slope:null b:null isLinearFunction:false, isConstant=false, extension=false},RegularTriangleRelation:RegularTriangle:△ABF,RegularTriangleRelation:RegularTriangle:△ACF,SegmentRelation:BD,SegmentRelation:CE,MultiEqualityRelation [multiExpressCompare=∠ADB=∠AEC=∠BAC, originExpressRelationList=[], keyWord=null, result=null],ProveConclusionRelation:[Proof: TriangleCongRelation{triangleA=△ABD, triangleB=△CAE}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]S_△ABC)}, SolveGeoShapeConclusionRelation{iPolygon=△DEF, iPolygonType=SOLVEENCLOSESHAPE}

255, topic: As shown in the △ABC, ∠B =45 °, ∠ACB =60 °, $ AB =3 \ sqrt {2} $, D is a point that the extension line of the BA, and ∠D =∠ACB, ⊙O circumcircle of △ACD #% # (1) of the required length BC;. #% # (2) find the radius of ⊙O #% # <img>.

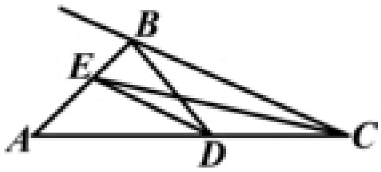


graph:
{"stem":{"pictures":[{"picturename":"1000080969_Q_1.jpg","coordinates":{"A":"-1.24,3.00","B":"-4.24,0.00","C":"0.49,0.00","D":"-0.51,3.73","O":"0.49,2.00"},"collineations":{"0":"B###A###D","1":"C###B","2":"C###D","3":"A###C"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"A###D###C"}]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleRelation:△ABC,EqualityRelation{∠ABC=(1/4*Pi)},EqualityRelation{∠ACB=(1/3*Pi)},EqualityRelation{AB=3*(2^(1/2))},PointOnLineRelation{point=D, line=BA, isConstant=false, extension=true},EqualityRelation{∠ADC=∠ACB},InscribedShapeOfCircleRelation{closedShape=△ACD, circle=Circle[⊙O]{center=O,

analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}},EqualityRelation{BC=v_0},Calculation:(ExpressRelation:[key:]v_0),圆的半径：CircleRelation{circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]BC)},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]AO)}

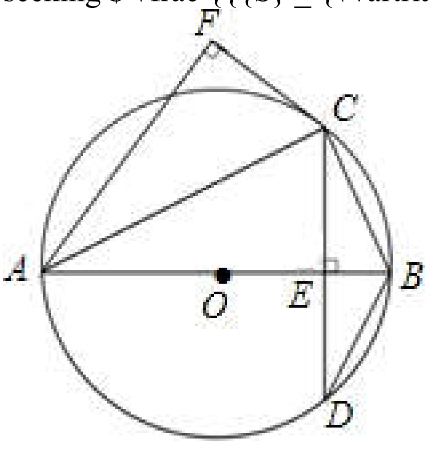
256, topic: As shown in the $ △ABC $, $ ∠ABC =100 ° $, $ ∠ACB =20 ° $, CE bisecting $ ∠ACB $, D is the point on the AC, if $ ∠CBD =20 ° $, seeking $ ∠ADE $ degrees. <img>



graph:
{"stem":{"pictures":[{"picturename":"1000021308_Q_1.jpg","coordinates":{"A":"0.00,0.00","B":"1.81,3.13","C":"10.40,0.00","D":"5.53,0.00","E":"0.96,1.66"},"collineations":{"0":"E###A###B","1":"C###E","2":"E###D","3":"D###B","4":"B###C","5":"A###D###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleRelation:△ABC,EqualityRelation{∠CBE=(5/9*Pi)},EqualityRelation{∠BCD=(1/9*Pi)},AngleBisectorRelation{line=CE,angle=∠BCD, angle1=∠BCE, angle2=∠DCE},PointOnLineRelation{point=D, line=AC, isConstant=false, extension=false},EqualityRelation{∠CBD=(1/9*Pi)},Calculation:AngleRelation{angle=∠ADE},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]∠ADE)}

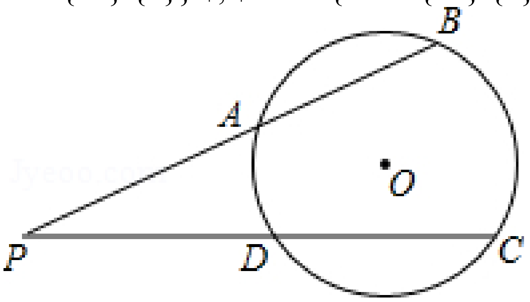
257, topic: FIG, AB is a $ \ odot O $ diameter, chord CD⊥AB, pedal point E, CF⊥AF, and CF =CE #% # (1) Prove:. CF is $ \ ODOT O $ tangent; #% # (2) when the $ \ sin \ angle BAC =\ frac {2} {5} $, seeking $ \ frac {{{S} _ {\ vartriangle CBD}}} {{{S {} _ \ value vartriangle ABC}}} $ a. #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000060765_Q_1.jpg","coordinates":{"A":"-2.00,0.00","B":"2.00,0.00","C":"1.14,1.64","D":"1.14,-1.64","E":"1.14,0.00","F":"-0.32,2.59","O":"0.00,0.00"},"collineations":{"0":"A###F","1":"A###C","2":"D###B","3":"C###F","4":"C###B","5":"C###E###D","6":"A###O###E###B"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"A###D###C###B"}]}],"appliedproblems":{}},"substems":[]}

NLP: ChordOfCircleRelation{chord=CD, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, chordLength=null,straightLine=null},DiameterRelation{diameter=AB, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, length=null},LinePerpRelation{line1=CD, line2=AB, crossPoint=E},LinePerpRelation{line1=CF, line2=AF, crossPoint=F},EqualityRelation{CF=CE},EqualityRelation{sin(∠CAO)=(2/5)},Calculation:(ExpressRelation:[key:]S_△BCD)/S_△ABC),ProveConclusionRelation:[Proof: LineContactCircleRelation{line=CF, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, contactPoint=Optional.of(C), outpoint=Optional.of(F)}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]S_△BCD)/S_△ABC)}

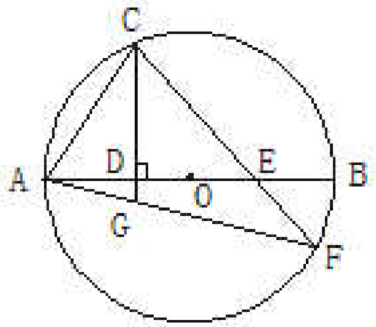
258, topic:. As shown, the radius of ⊙O 5, the point P is outside ⊙O, PB in cross ⊙O A, B points, PC in cross ⊙O D, C #% # points (1) to verify : $ PA \cdot PB =PD \cdot PC $; #% # (2) when the $ PA ={\frac {45} {4}} $, $ AB ={\frac {19} {4}} $, PD =DC + 2, from the PC to find the point O. #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000040041_Q_1.jpg","coordinates":{"A":"-4.98,0.48","B":"0.98,4.90","C":"3.00,-4.00","D":"-3.00,-4.00","P":"-11.00,-4.00","O":"0.00,0.00"},"collineations":{"0":"P###D###C","1":"P###A###B"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"B###A###D###C"}]}],"appliedproblems":{}},"substems":[]}

NLP: RadiusRelation{radius=null, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, length=Express:[5]},PointOutCircleRelation{point=Pcurve=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, points=[P]},LineCrossCircleRelation{line=PB, circle=⊙O, crossPoints=[A, B], crossPointNum=2},LineCrossCircleRelation{line=PC, circle=⊙O, crossPoints=[D, C], crossPointNum=2},EqualityRelation{AP=(45/4)},EqualityRelation{AB=(19/4)},EqualityRelation{DP=CD+2},距离,求距离：PointToLineDistanceRelation{point=O, line=PC, distance=null},ProveConclusionRelation:[Proof: EqualityRelation{AP*BP=DP*CP}],SolutionConclusionRelation{relation=距离,求距离：PointToLineDistanceRelation{point=O, line=PC, distance=null}}

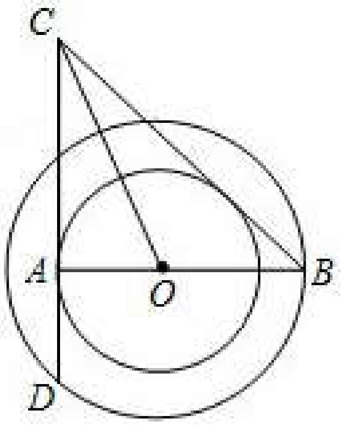
259, topic: is known, as shown, AB is $ ⊙O $ diameter, C is the point ⊙O, connected to AC, a straight line through the point C in $ CD⊥AB $ D ($ AD <DB $), point is an arbitrary point E (point D, B excluding) the DB, the straight line CE ⊙O cross at point F, AF connection line CD at point G.?#%#(1) Proof: $ {{AC} ^ {2 }} =AG \cdot AF $;? #% # (2) if point E is AD (except the point A) of any point, whether or not the conclusion still valid? If established, Draw graphics and give proof; if not established, please explain why.



graph: {"stem":{"pictures":[{"picturename":"1000026043_Q_1.jpg","coordinates":{"A":"-6.00,0.00","B":"6.00,0.00","C":"-1.50,5.81","D":"-1.50,0.00","E":"2.17,0.00","F":"4.60,-3.85","G":"-1.50,-1.63","O":"0.00,0.00"},"collineations":{"0":"F###C###E","1":"B###O###D###A###E","2":"D###G###C","3":"C###A","4":"G###F###A"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"C###F###A###B"}]}],"appliedproblems":{}},"substems":[{"substemid":"1","questionrelies":"2","pictures":[],"appliedproblems":{}},{"substemid":"2","questionrelies":"1","pictures":[],"appliedproblems":{}}]}

NLP: PointRelation:D,PointRelation:B,DiameterRelation{diameter=AB, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, length=null},PointOnCircleRelation{circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, points=[C]},SegmentRelation:AC,LinePerpRelation{line1=CD, line2=AB, crossPoint=D},PointOnLineRelation{point=E, line=DB, isConstant=false, extension=false},LineCrossCircleRelation{line=CE, circle=⊙O, crossPoints=[F], crossPointNum=1},LineCrossRelation [crossPoint=Optional.of(G), iLine1=AF, iLine2=CD],PointRelation:A,PointOnLineRelation{point=E, line=AD, isConstant=false, extension=false},ProveConclusionRelation:[Proof: EqualityRelation{((AC)^2)=AG*AF}]

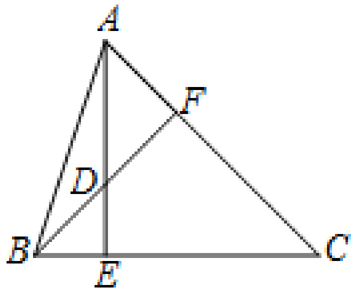
260, topic: as shown, to the center O of the two concentric circles, AB passes through the center O, and with a small circle at point A, with the great circles intersect at point B, the large circle and the small circle tangent AC at point D, and the CO bisects ∠ACB #% # (1) demonstrated:... BC where a straight line tangent to a small circle # #% (2) test determines the relationship between the number of AC, AD, BC, and the reasons% # # (3) If AB =8cm, BC =10cm, find great circle and the small circle surrounded by annular area (reserved result $ \ pi $). #% # <img>



graph: {"stem":{"pictures":[{"picturename":"1000060766_Q_1.jpg","coordinates":{"A":"-3.00,0.00","B":"5.00,0.00","C":"-2.99,6.01","D":"-2.98,-4.01","O":"0.00,0.00"},"collineations":{"0":"C###O","1":"C###B","2":"C###A###D","3":"A###O###B"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"D###B"}]}],"appliedproblems":{}},"substems":[]}

NLP: CircleCenterRelation {point =O, conic =Circle [⊙O] {center =O, analytic =(x-x_O) ^ 2 + (y-y_O) ^ 2 =r_O ^ 2}}, PointOnLineRelation {point =O, line =AB, isConstant =false, extension =false}, AngleBisectorRelation {line =CO, angle =∠ACB, angle1 =∠ACO, angle2 =∠BCO}, evaluation (size) :(ExpressRelation: [key:] (AC / AD)), evaluation (size) :(ExpressRelation: [key:] (AD / BC)), EqualityRelation {AB =8}, EqualityRelation {BC =10}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] (AC / AD))}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] (AD / BC))}

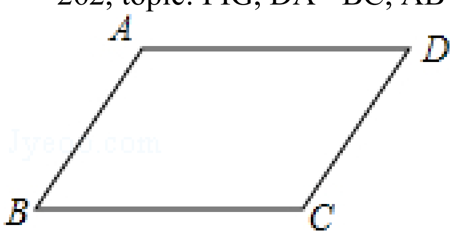
261, topic: As shown in the △ABC, AF: FC =1: 2, D is the midpoint of BF, BC and the AD extension lines intersect at points E, find BE: EC value of #% # <img. >



graph:
{"stem":{"pictures":[{"picturename":"1000041516_Q_1.jpg","coordinates":{"A":"1.53,2.96","B":"0.00,0.00","C":"4.18,0.00","D":"1.21,0.99","E":"1.05,0.00","F":"2.42,1.97"},"collineations":{"0":"A###B","1":"B###E###C","2":"C###F###A","3":"A###D###E","4":"B###D###F"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleRelation:△ABC,EqualityRelation{(AF)/(CF)=(1)/(2)},MiddlePointOfSegmentRelation{middlePoint=D,segment=BF},LineCrossRelation [crossPoint=Optional.of(E), iLine1=AD, iLine2=BC],Calculation:(ExpressRelation:[key:]BE/CE),SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]BE/CE)}

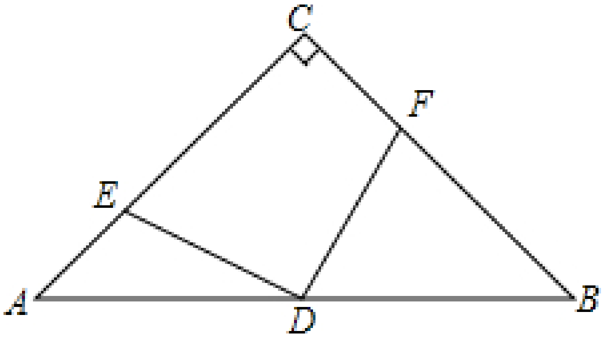
262, topic: FIG, DA =BC, AB =CD, Proof: . ∠A + ∠D =180 ° #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000030728_Q_1.jpg","coordinates":{"A":"-11.00,5.00","B":"-12.00,3.00","C":"-9.00,3.00","D":"-8.02,5.00"},"collineations":{"0":"A###B","1":"B###C","2":"C###D","3":"A###D"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: EqualityRelation{AD=BC},EqualityRelation{AB=CD},ProveConclusionRelation:[Proof: EqualityRelation{∠BAD+∠ADC=(Pi)}]

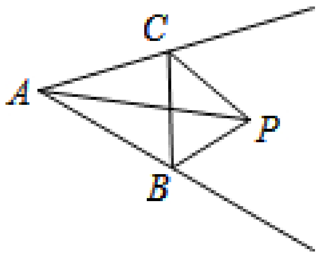
263, topic: As shown in the △ABC, ∠ACB =90 °, AC =BC, point D is the midpoint of AB, AE =CF Proof:. DE⊥DF #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000035759_Q_1.jpg","coordinates":{"A":"0.00,0.00","B":"6.00,0.00","C":"3.00,3.00","D":"3.00,0.00","E":"1.00,1.00","F":"4.00,2.00"},"collineations":{"0":"A###D###B","1":"A###E###C","2":"B###C###F","3":"D###E","4":"F###D"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleRelation:△ABC,EqualityRelation{∠ECF=(1/2*Pi)},EqualityRelation{AC=BC},MiddlePointOfSegmentRelation{middlePoint=D,segment=AB},EqualityRelation{AE=CF},ProveConclusionRelation:[Proof: LinePerpRelation{line1=DE, line2=DF, crossPoint=D}]

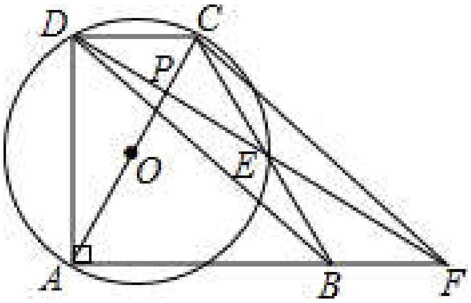
264, topic: FIG, PB, PC are △ABC exterior angle bisector which intersects at a point P, is connected AP #% # (1) Proof: AP is the bisector of ∠A;% # # (2). If AB =6, AC =4, BC =3, seeking $ {{S} _ {\vartriangle PAB}}: {{S} _ {\vartriangle PBC}}: {{S} _ {\vartriangle PAC}} the value of $. #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000031273_Q_1.jpg","coordinates":{"A":"-7.81,2.97","B":"-2.12,1.77","C":"-4.14,4.00","P":"-1.32,3.18"},"collineations":{"0":"A###P","1":"A###B","2":"A###C","3":"B###C","4":"P###C","5":"P###B"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleRelation:△ABC,SegmentRelation:AP,AngleBisectorRelation{line=PB,angle=∠APC, angle1=∠BPC, angle2=∠APB},AngleBisectorRelation{line=PC,angle=∠APB, angle1=∠APC, angle2=∠BPC},EqualityRelation{AB=6},EqualityRelation{AC=4},EqualityRelation{BC=3},Calculation:(ExpressRelation:[key:]S_△ABP):S_△BCP):S_△ACP)),SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]S_△ABP):S_△BCP):S_△ACP))}

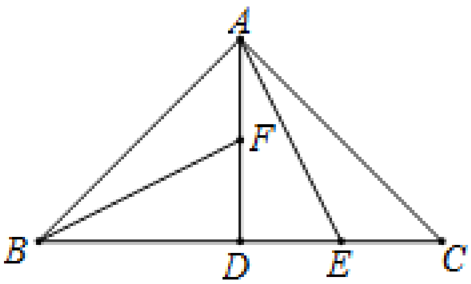
265, topic: As shown, the right trapezoid ABCD, AB∥CD, ∠DAB =90 °, and ∠ABC =60 °, AB =BC, △ACD ⊙O circumscribed circle BC at point E, and the extension connector DE cross AC at point P, for extending the line AB at point F #% # (1) Prove:. CF =DB; #% # (2) when the $ AD =\ sqrt {3} $, find the point E to CF distance. #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000060808_Q_1.jpg","coordinates":{"A":"5.00,4.27","B":"9.00,4.27","C":"7.00,7.73","D":"5.00,7.73","E":"8.00,6.00","F":"11.00,4.27","P":"6.50,6.87","O":"6.00,6.00"},"collineations":{"0":"A###B###F","1":"F###C","2":"C###D","3":"D###A","4":"A###O###P###C","5":"B###D","6":"B###E###C","7":"F###E###P###D"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"A###D###C###E"}]}],"appliedproblems":{}},"substems":[]}

NLP: InscribedShapeOfCircleRelation{closedShape=△ACD, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}},RightTrapezoidRelation{rightTrapezoid=RightTrapezoid:ABCD randomOrder:true},LineParallelRelation [iLine1=AB, iLine2=CD],EqualityRelation{∠BAD=(1/2*Pi)},EqualityRelation{∠ABE=(1/3*Pi)},EqualityRelation{AB=BC},LineCrossCircleRelation{line=BC, circle=⊙O, crossPoints=[E], crossPointNum=1},SegmentRelation:DE,LineCrossRelation [crossPoint=Optional.of(P), iLine1=DE, iLine2=AC],LineCrossRelation [crossPoint=Optional.of(F), iLine1=DE, iLine2=AB],EqualityRelation{AD=(3^(1/2))},距离,求距离：PointToLineDistanceRelation{point=E, line=CF, distance=null},ProveConclusionRelation:[Proof: EqualityRelation{CF=BD}],SolutionConclusionRelation{relation=距离,求距离：PointToLineDistanceRelation{point=E, line=CF, distance=null}}

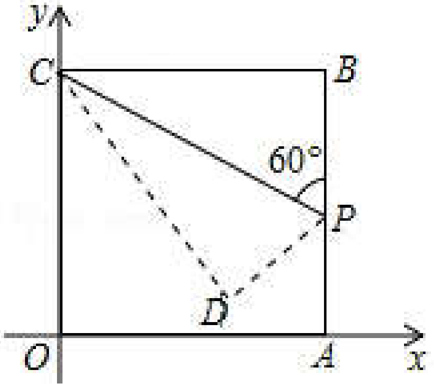
266, topic: FIG at Rt △BAC is known AB =AC, ∠BAC =90 °, AD⊥BC at points D, point F, E, respectively, in the AD, DC, and AF =CE, link BF ., AE #% # (1) Prove:? △ABF≌ △CAE; #% # (2) having an AE BF determines how positional relationship and the reasons #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000037589_Q_1.jpg","coordinates":{"A":"-6.00,8.00","B":"-9.00,5.00","C":"-3.00,5.00","D":"-6.00,5.00","E":"-4.50,5.00","F":"-6.00,6.50"},"collineations":{"0":"A###F###D","1":"B###D###E###C","2":"B###A","3":"A###C","4":"A###E","5":"B###F"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: RightTriangleRelation:RightTriangle:△BAC[Optional.of(A)],EqualityRelation{AB=AC},EqualityRelation{∠BAC=(1/2*Pi)},LinePerpRelation{line1=AD, line2=BC, crossPoint=D},PointOnLineRelation{point=F, line=AD, isConstant=false, extension=false},PointOnLineRelation{point=E, line=DC, isConstant=false, extension=false},EqualityRelation{AF=CE},SegmentRelation:BF,SegmentRelation:AE,ProveConclusionRe lation:[Proof: TriangleCongRelation{triangleA=△ABF, triangleB=△CAE}],JudgePostionConclusionRelation: [data1=BF, data2=AE]

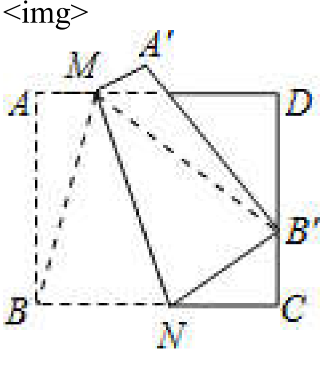
267, topic: As shown in the plane rectangular coordinate system, OABC square, the coordinates of the point A is $ (4,0) $, the point P on the edge AB, and $ ∠CPB =60 ° $, $ a △$ folded along the CPB CP, so that the point B falls at point D, point D to find the coordinates.



graph:
{"stem":{"pictures":[{"picturename":"1000020089_Q_1.jpg","coordinates":{"A":"4.00,0.00","B":"4.00,4.00","C":"0.00,4.00","D":"2.00,0.54","O":"0.00,0.00","P":"4.00,1.69"},"collineations":{"0":"C###B","1":"C###O","2":"O###A","3":"A###P###B","4":"C###D","5":"P###C","6":"D###P"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: SquareRelation{square=Square:ABCO},PointRelation:A(4,0),PointOnLineRelation{point=P, line=AB, isConstant=false, extension=false},EqualityRelation{∠BPC=(1/3*Pi)},TurnoverRelation{start=B, segment=CP,target=D},Coordinate:PointRelation:D,SolutionConclusionRelation{relation=Coordinate:Point Relation:D}

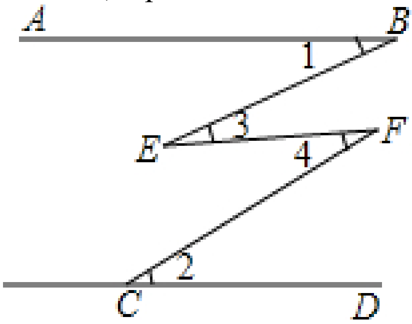
268, topic: FIG, quadrangle ABCD is a square of the paper sheet 9, the MN is folded along the B side of the point B falls CD 'at the corresponding point of the point A is A', and B ' C =3, AM seeking long. #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"10000802666_Q_1.jpg","coordinates":{"A":"-2.00,3.00","B":"-2.00,0.00","C":"1.00,0.00","D":"1.00,3.00","M":"-1.33,3.00","N":"-0.33,0.00","A'":"-0.80,3.40","B'":"1.00,1.00"},"collineations":{"0":"A###M###D","1":"A###B","2":"B###N###C","3":"C###B'###D","4":"M###N","5":"M###A'","6":"A'###B'","7":"N###B'"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: EqualityRelation{AM=v_0},SquareRelation{square=Square:ABCD, length=9},SymmetricRelation{preData=B,afterData=B',symmetric=StraightLine[MN] analytic :y=k_MN*x+b_MN slope:null b:null isLinearFunction:false, pivot=},PointOnLineRelation{point=B', line=CD, isConstant=false, extension=false},EqualityRelation{B'C=3},Calculation:(ExpressRelation:[key:]v_0),SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]AM)}

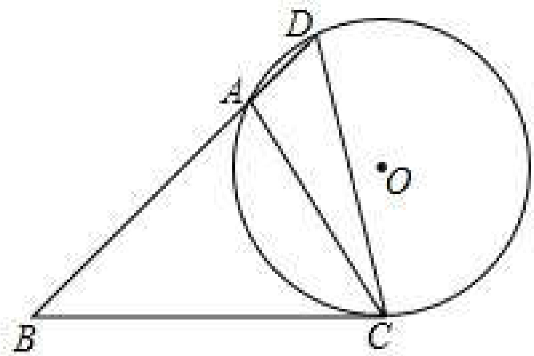
269, topic: FIG known AB // CD, ∠1 =∠2, Proof: . ∠3 =∠4 #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1C404F4D5C3A476589A75E8C00B34F38.jpg","coordinates":{"A":"-16.00,9.00","B":"-10.00,9.00","C":"-13.00,3.00","D":"-6.00,3.00","E":"-15.00,6.00","F":"-8.00,6.00"},"collineations":{"0":"A###B","1":"F###E","2":"B###E","3":"D###C","4":"F###C"},"variable-equals":{"0":"∠1=∠ABE","1":"∠2=∠DCF","2":"∠3=∠BEF","3":"∠4=∠EFC"},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: LineParallelRelation [iLine1=AB, iLine2=CD],EqualityRelation{∠ABE=∠DCF},ProveConclusionRelation:[Proof: EqualityRelation{∠BEF=∠CFE}]

270, topic: As shown in the △ABC, ∠B =45 °, ∠ACB =60 °, $ AB =3 \ sqrt {2} $, point D is a point on an extension line of the BA, and ∠D =. ∠ACB, $ \ odot O $ circumcircle of △ACD #% # (1) of the required length BC;% # # radius (2) find $ \ odot O $ a #% # <img>.

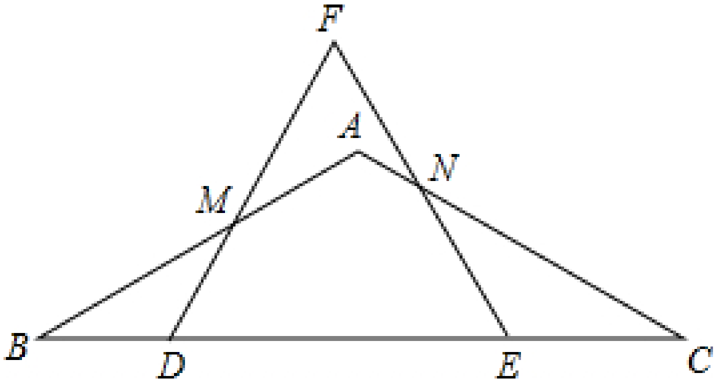


graph:
{"stem":{"pictures":[{"picturename":"1000060749_Q_1.jpg","coordinates":{"A":"-1.73,1.00","B":"-4.73,-2.00","C":"0.00,-2.00","D":"-1.00,1.73","O":"0.00,0.00","E":"-1.73,-2.00","M":"1.73,-1.00","H":"-0.63,0.37","I":"-1.73,-1.00"},"collineations":{"0":"B###A###D","1":"B###C###E","2":"A###O###M###H","3":"D###H###C","4":"A###E###I","5":"A###C","6":"C###M"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"A###D###C###M###I"}]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleRelation:△ABC,EqualityRelation{∠ABE=(1/4*Pi)},EqualityRelation{∠ACE=(1/3*Pi)},EqualityRelation{AB=3*(2^(1/2))},PointOnLineRelation{point=D, line=BA, isConstant=false, extension=true},EqualityRelation{∠ADH=∠ACE},InscribedShapeOfCircleRelation{closedShape=△ACD, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}},EqualityRelation{BC=v_0},Calculation:(ExpressRelation:[key:]v

_0),圆的半径：CircleRelation{circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]BC)},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]AO)}

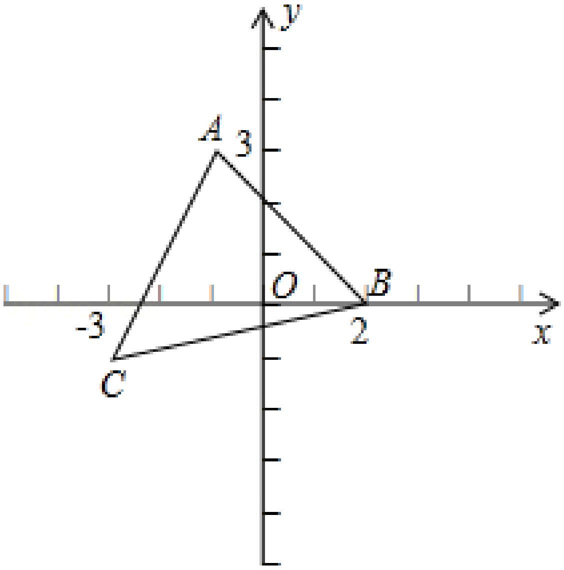
271, topic: As shown in the △ABC, AB =AC, ∠B =30 °, BC =8, point D on the BC side, a point on the line segment E DC, DE =4, △DEF equilateral triangle , side cross-DF side AB at point M, the edge EF side cross-AC (1) to verify the points N #% #:. △BMD∽ △CNE; #% # (2) is provided BD =x, the area of pentagon ANEDM to y, find analytic function of formula (asked to write in the range of the argument x) between y and x. #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1E7FF655C60648BC9D52C93F12B70544.jpg","coordinates":{"A":"-11.00,5.31","B":"-15.00,3.00","C":"-7.00,3.00","D":"-13.00,3.00","E":"-9.00,3.00","F":"-11.00,6.46","M":"-12.00,4.73","N":"-10.00,4.73"},"collineations":{"0":"M###D###F","1":"A###B###M","2":"A###C###N","3":"E###N###F","4":"B###C###D###E"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleRelation:△ABC,EqualityRelation{AB=AC},EqualityRelation{∠DBM=(1/6*Pi)},EqualityRelation{BC=8},PointOnLineRelation{point=D, line=BC, isConstant=false, extension=false},PointOnLineRelation{point=E, line=DC, isConstant=false, extension=false},EqualityRelation{DE=4},RegularTriangleRelation:RegularTriangle:△DEF,LineCrossRelation [crossPoint=Optional.of(M), iLine1=DF, iLine2=AB],LineCrossRelation [crossPoint=Optional.of(N), iLine1=EF, iLine2=AC],EqualityRelation{BD=x},DualExpressRelation:DualExpressRelation{expresses=[Express:[y], Express:[x]]},ProveConclusionRelation:[Proof: TriangleSimilarRelation{triangleA=△BMD, triangleB=△CNE}],SolutionConclusionRelation{relation=DualExpressRelation:DualExpressRelation{expresses=[Express:[y], Express:[x]]}}

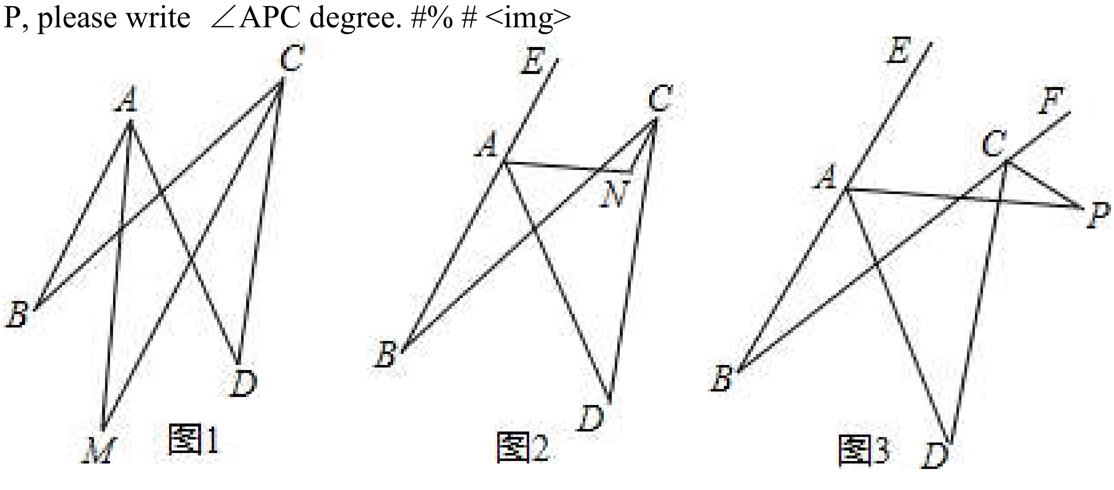
272, topic:. As shown, the plane rectangular coordinate system is known in A (-1,3), B (2,0), C (-3, -1) #% # (1) to △ABC in FIG. symmetry about the y axis $ \ vartriangle {{a} _ {1}} {{B} _ {1}} {{C} _ {1}} $, and write point $ {{a} _ {1 }} $, $ {{B} _ {1}} $, $ {{C} _ {1}} $ coordinates;% # # (2) find a point P on the y-axis, so that PA + PC shortest, and calculates the shortest distance. #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000081497_Q_1.jpg","coordinates":{"A":"-1.00,3.00","B":"2.00,0.00","C":"-3.00,-1.00","O":"0.00,0.00"},"collineations":{"0":"B###C","1":"A###B","2":"A###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP:
PointRelation:A(-1,3),PointRelation:B(2,0),PointRelation:C(-3,-1),Coordinate:PointRelation:A_1,Coordinate:PointRelation:B_1,Coordinate:PointRelation:C_1,PointOnLineRelation{point=P, line=StraightLine[Y] analytic :x=0 slope: b: isLinearFunction:false, isConstant=false, extension=false},(ExpressRelation:[key:]AP+CP),SolutionConclusionRelation{relation=Coordinate:PointRelation:A_1},SolutionConclusionRelation{relation=Coordinate:PointRelation:B_1},SolutionConclusionRelation{relation=Coordinate:PointRelation:C_1}

273, topic: as shown, in a plane, four line segments AB, BC, CD, DA sequentially joined end to end, ∠ABC =20 °, ∠ADC =40 ° #% # (1) in FIG. 1, ∠BAD and. ∠BCD angle bisector at point M, the required size ∠AMC;% # # (2) in FIG. 2, the point E on the extension line of BA, ∠DAE and ∠BCD bisector bisectors intersect at point N, seeking ∠ANC degree; #% # (3) in FIG. 3, point E on the extension line of the BA, the point F on the extension line of the BC, ∠DAE and ∠DCF bisector bisectors intersect at point P, please write ∠APC degree. #% # <img>

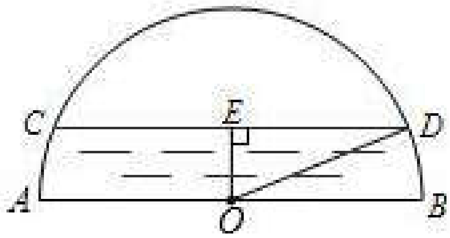


graph:
{"stem":{"pictures":[],"appliedproblems":{}},"substems":[{"substemid":"1","questionrelies":"","pictures":[{"picturename":"1000038443_Q_1.jpg","coordinates":{"A":"-5.54,5.34","B":"-7.46,2.28","C":"-2.25,6.35",

"D":"-4.37,1.46","M":"-6.07,1.41"},"collineations":{"0":"A###B","1":"A###D","2":"A###M","3":"B###C","4":"C###M","5":"C###D"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},{"substemid":"2","questionrelies":"","pictures":[{"picturename":"1000038443_Q_2.jpg","coordinates":{"A":"-5.54,5.34","B":"-7.46,2.28","C":"-2.25,6.35","D":"-4.37,1.46","E":"-4.50,7.01","N":"-3.26,5.04"},"collineations":{"0":"B###A###E","1":"A###N","2":"A###D","3":"B###C","4":"C###N","5":"C###D"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},{"substemid":"3","questionrelies":"","pictures":[{"picturename":"1000038443_Q_3.jpg","coordinates":{"A":"-5.54,5.34","B":"-7.46,2.28","C":"-2.25,6.35","D":"-4.37,1.46","E":"-4.50,7.01","F":"-0.70,7.56","P":"0.01,4.61"},"collineations":{"0":"B###A###E","1":"A###P","2":"A###D","3":"B###C###F","4":"C###P","5":"C###D"},"variable-equals":{},"circles":[]}],"appliedproblems":{}}]}

NLP: MultiPointCollinearRelation:[A, B],MultiPointCollinearRelation:[B, C],MultiPointCollinearRelation:[C, D],MultiPointCollinearRelation:[D, A],EqualityRelation{∠ABC=(1/9*Pi)},EqualityRelation{∠ADC=(2/9*Pi)},AngleBisectorRelation{line=AM,angle=∠BAD, angle1=∠BAM, angle2=∠DAM},AngleBisectorRelation{line=CM,angle=∠BCD, angle1=∠BCM, angle2=∠DCM},(ExpressRelation:[key:]1),LineCrossRelation [crossPoint=Optional.of(M), iLine1=N_1M_2, iLine2=N_3M_4],Calculation:AngleRelation{angle=∠AMC},AngleBisectorRelation{line=M_5N_5,angle=∠DAE, angle1=∠DAM_5, angle2=∠EAM_5},AngleBisectorRelation{line=CM,angle=∠BCD, angle1=∠BCM, angle2=∠DCM},(ExpressRelation:[key:]2),PointOnLineRelation{point=E, line=BA, isConstant=false, extension=true},Calculation:AngleRelation{angle=∠ANC},AngleBisectorRelation{line=M_7N_7,angle=∠DAE, angle1=∠DAM_7, angle2=∠EAM_7},AngleBisectorRelation{line=M_8N_8,angle=∠DCF, angle1=∠DCM_8, angle2=∠FCM_8},(ExpressRelation:[key:]3),PointOnLineRelation{point=E, line=BA, isConstant=false, extension=true},PointOnLineRelation{point=F, line=BC, isConstant=false, extension=true},Calculation:AngleRelation{angle=∠APC},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]∠AMC)},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]∠ANC)},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]∠APC)}

274, topic: FIG is a schematic cross-sectional semi-circular bridge opening, the center is O, r is the diameter of the bottom AB, CD is the chord water line, CD // AB, and AB =26m, OE⊥CD when the normal water level at point E. measured OE: CD =5: 24 #% # (1) of the required length CD;% # # (2) is flood season, the water to rise at a speed of 4m per hour, is how long it will just be fed dong full? #% # <img>

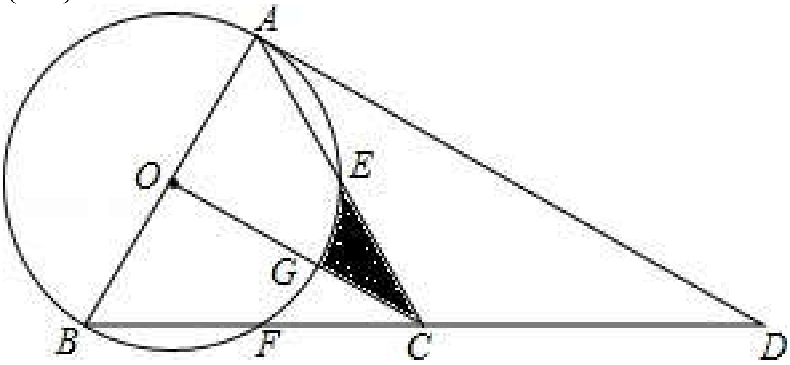


graph: {"stem":{"pictures":[{"picturename":"1000052550_Q_1.jpg","coordinates":{"A":"-9.62,-0.01","B":"3.38,-0.09","C":"-9.11,2.48","D":"2.89,2.41","E":"-3.11,2.45","O":"-3.12,-0.05"},"collineations":{"0":"O###E","1":"O###D","2":"D###E###C","3":"A###O###B"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"A###B###C###D"}]}],"appliedproblems":{}},"substems":[]}

NLP: DiameterRelation{diameter=AB, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, length=null},ChordOfCircleRelation{chord=CD, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, chordLength=null,straightLine=null},CircleCenterRelation{point=O, conic=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}},LineParallelRelation [iLine1=CD, iLine2=AB],EqualityRelation{AB=26*m},LinePerpRelation{line1=OE, line2=CD,

crossPoint=E},EqualityRelation{CD=v_0},Calculation:(ExpressRelation:[key:]v_0),SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]CD)}

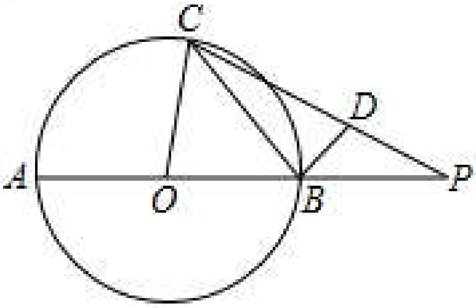
275, topic: FIG point D equilateral $ △ABC $ extension line side BC in point, and $ AC =CD $, AB in diameter as $ ⊙O $, respectively, side cross-AC, BC at point E, point F.?#%#(1) Prove:? AD is tangent $ ⊙O $;% # # (2) is connected OC, pay $ ⊙O $ at point G, if $ AB =4 $, seek line CE, CG and $ \ widehat {GE} $ enclosed shaded area S.



graph:
{"stem":{"pictures":[{"picturename":"1000026755_Q_1.jpg","coordinates":{"A":"1.88,4.92","B":"-0.62,0.59","C":"4.38,0.59","D":"9.38,0.59","E":"3.13,2.76","F":"1.88,0.59","G":"2.79,1.51","O":"0.63,2.76"},"collineations":{"0":"A###O###B","1":"A###E###C","2":"A###D","3":"O###C","4":"B###F###C###D"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"A###B###E###G###F"}]}],"appliedproblems":{}},"substems":[]}

NLP: EqualityRelation{AC=CD},DiameterRelation{diameter=AB, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, length=null},LineCrossCircleRelation{line=AC, circle=⊙O, crossPoints=[E], crossPointNum=1},LineCrossCircleRelation{line=BC, circle=⊙O, crossPoints=[F], crossPointNum=1},SegmentRelation:OC,LineCrossCircleRelation{line=OC, circle=⊙O, crossPoints=[G], crossPointNum=1},EqualityRelation{AB=4},Calculation:(ExpressRelation:[key:]S),ProveConclusionRelation:[Proof: LineContactCircleRelation{line=AD, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, contactPoint=Optional.of(A), outpoint=Optional.of(D)}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]S)}

276, topic: as shown, is $ ⊙O $ AB diameter, AB extended to the point P, making $ BP =OB $, BD perpendicular to the string the BC, pedal to point B, the point D is provided on the PC $ \. .? angle PCB =\ alpha $, $ \ angle POC =\ beta $ #% # Proof: $ \ tan \ alpha \ cdot \ tan \ frac {\ beta} {2} =\ frac {1} {3} $.

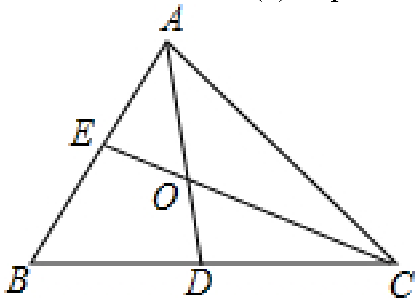


graph:
{"stem":{"pictures":[{"picturename":"1000025048.jpg","coordinates":{"A":"-4.00,0.00","B":"4.00,0.00","C

":"0.50,3.97","D":"4.87,1.65","P":"8.00,0.00","O":"0.00,0.00"},"collineations":{"0":"B###A###D###P","1":"C###P###D","2":"C###O","3":"D###B"},"variable-equals":{"0":"∠α=∠PCB","1":"∠β=∠POC"},"circles":[{"center":"O","pointincircle":"C###B###A"}]}],"appliedproblems":{}},"substems":[]}

NLP: ChordOfCircleRelation{chord=BC, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, chordLength=null,straightLine=null},DiameterRelation{diameter=AB, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, length=null},PointOnLineRelation{point=P, line=AB, isConstant=false, extension=true},EqualityRelation{BP=BO},LinePerpRelation{line1=BD, line2=BC, crossPoint=B},PointOnLineRelation{point=D, line=PC, isConstant=false, extension=false},EqualityRelation{∠PCB=α},EqualityRelation{∠POC=β},ProveConclusionRelation:[Proof: EqualityRelation{tan(α)*tan((β)/2)=(1/3)}]

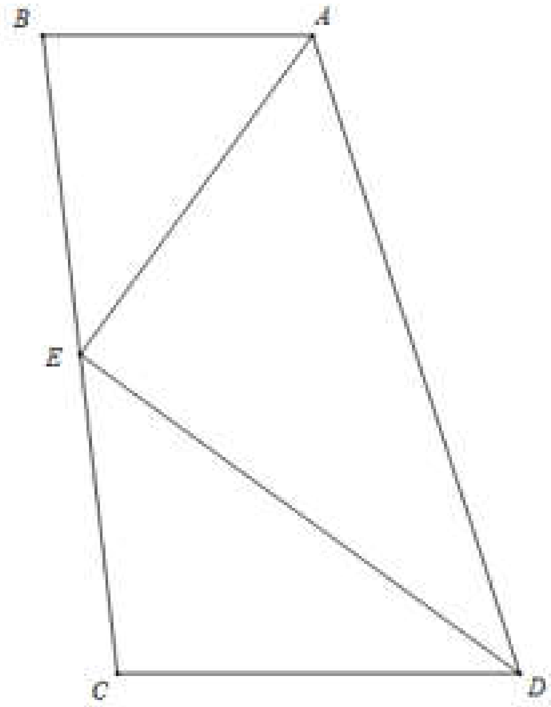
277, topic: As shown in the △ABC, ∠ABC =60 °, AD, CE are equally ∠BAC, ∠ACB, AD, CE intersect at O #% # (1) required degree ∠AOC; #%. # (2) Proof: AC =AE + CD #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"24DDE33B3BDF4DB9AAA728CB9B09F930.jpg","coordinates":{"A":"-11.08,9.05","B":"-14.00,4.00","C":"-6.00,4.00","D":"-10.41,4.00","E":"-12.46,6.66","O":"-10.67,5.92"},"collineations":{"0":"A###B###E","1":"A###O###D","2":"A###C","3":"C###E###O","4":"D###B###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[{"substemid":"2","questionrelies":"1","pictures":[],"appliedproblems":{}}]}

NLP: TriangleRelation: △ABC, EqualityRelation {∠DBE =(1/3 * Pi)}, AngleBisectorRelation {line =AD, angle =∠CAE, angle1 =∠CAD, angle2 =∠DAE}, AngleBisectorRelation {line =CE, angle =∠ACD, angle1 =∠ACE, angle2 =∠DCE}, LineCrossRelation [crossPoint =Optional.of (O), iLine1 =AD, iLine2 =CE], find the size of the angle: AngleRelation {angle =∠AOC}, SolutionConclusionRelation { evaluation relation =(size) :(ExpressRelation: [key:] ∠AOC)}, ProveConclusionRelation: [Proof: EqualityRelation {AC =AE + CD}]

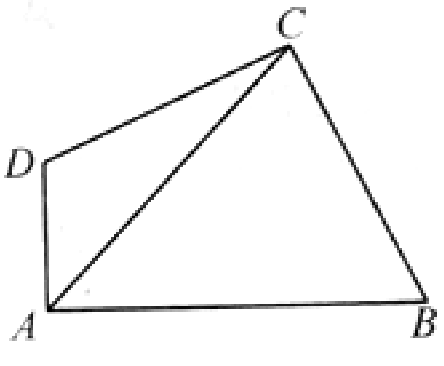
278, topic: FIG known AB // CD, AE, DE ∠BAD respectively and the bisector ∠ADC Proof: AB + CD =AD #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000040372_Q_1.jpg","coordinates":{"A":"-2.73,10.08","B":"-6.75,10.08","C":"-5.64,0.56","D":"0.36,0.56","E":"-6.19,5.32"},"collineations":{"0":"A###E","1":"A###D","2":"A###B","3":"B###E###C","4":"D###E","5":"C###D"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: LineParallelRelation [iLine1=AB, iLine2=CD],AngleBisectorRelation{line=AE,angle=∠BAD, angle1=∠BAE, angle2=∠DAE},AngleBisectorRelation{line=DE,angle=∠ADC, angle1=∠ADE, angle2=∠CDE},ProveConclusionRelation:[Proof: EqualityRelation{AB+CD=AD}]

279, topic: As shown, the quadrangle ABCD, BC =DC, AC diagonal bisects ∠BAD, and AB =21, AD =9.BC =DC =10, long seeking AC #% # <img>.

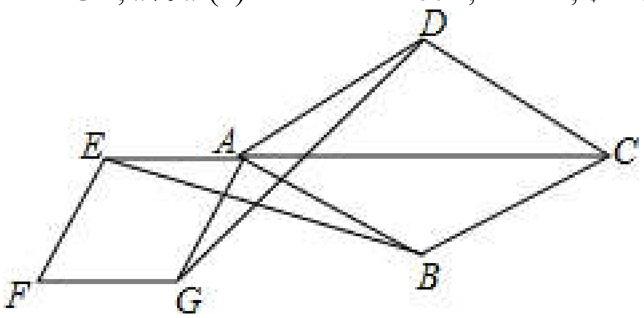


graph:
{"stem":{"pictures":[{"picturename":"1000031261_Q_1.jpg","coordinates":{"A":"-10.50,2.00","B":"0.00,2.00","C":"-3.00,6.00","D":"-7.99,5.74"},"collineations":{"0":"A###D","1":"A###B","2":"A###C","3":"B###C","4":"D###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP:
EqualityRelation{AC=v_0},Know:QuadrilateralRelation{quadrilateral=ABCD},EqualityRelation{BC=CD},AngleBisectorRelation{line=AC,angle=∠BAD, angle1=∠BAC, angle2=∠CAD},EqualityRelation{AB=21},EqualityRelation{AD=9},MultiEqualityRelation

[multiExpressCompare=BC=CD=10, originExpressRelationList=[], keyWord=null, result=null],Calculation:(ExpressRelation:[key:]v_0),SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]AC)}

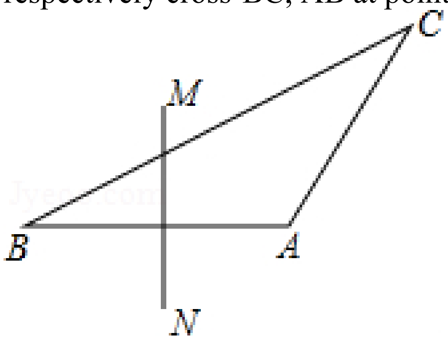
280, topic: FIG point E rhombus ABCD diagonal extension line CA any point, as an edge line segment AE to make a diamond AEFG, diamond and diamond AEFG∽ ABCD, connected EB, GD #% # (1.) Proof: EB =GD; #% # (2) if ∠DAB =60 °, AB =2, $ AG =\ sqrt {3} $, long seeking GD #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000035296_Q_1.jpg","coordinates":{"A":"0.00,0.00","B":"2.33,-1.32","C":"4.64,0.03","D":"2.31,1.35","E":"-2.47,-0.02","F":"-3.68,-2.16","G":"-1.22,-2.14"},"collineations":{"0":"A###B","1":"B###C","2":"C###D","3":"D###A","4":"E###A###C","5":"E###F","6":"F###G","7":"G###A","8":"G###D","9":"B###E"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: QuadrilateralSimilarRelation [quadrilateralA=Rhombus:AEFG, quadrilateralB=Rhombus:ABCD],SegmentRelation:EB,SegmentRelation:GD,EqualityRelation{DG=v_0},EqualityRelation{∠BAD=(1/3*Pi)},EqualityRelation{AB=2},EqualityRelation{AG=(3^(1/2))},Calculation:(ExpressRelation:[key:]v_0),ProveConclusionRelation:[Proof: EqualityRelation{BE=DG}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]DG)}

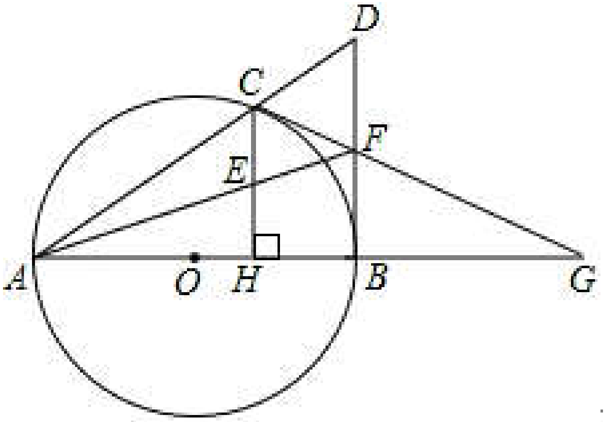
281, topic: As shown in the △ABC, AB =AC, ∠A =120 °, AB perpendicular bisector of MN, respectively cross-BC, AB at point M, N Proof: CM =2BM #% # <img. >



graph:
{"stem":{"pictures":[{"picturename":"1000041472_Q_1.jpg","coordinates":{"A":"3.40,0.00","B":"0.00,0.00","C":"5.20,3.12","M":"1.70,2.01","N":"1.70,-0.98"},"collineations":{"0":"A###B","1":"A###C","2":"C###B","3":"M###N"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleRelation:△ABC,EqualityRelation{AB=AC},EqualityRelation{∠BAC=(2/3*Pi)},MiddlePerpendicularRelation [iLine1=AB, iLine2=MN, crossPoint=Optional.absent()],LineCrossRelation [crossPoint=Optional.of(M), iLine1=MN, iLine2=BC],LineCrossRelation [crossPoint=Optional.of(N), iLine1=MN, iLine2=AB],ProveConclusionRelation:[Proof: EqualityRelation{CM=2*BM}]

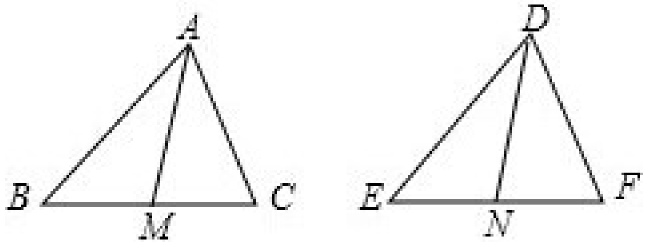
282, topic: As shown, point C is the known diameter AB of the point $ ⊙ O $, $ CH \ bot AB $ at point H, point B for over $ ⊙ O $ tangent to the point D cross Linear AC , point E is the midpoint of the CH, and extends cross-coupling at point F. BD, CF straight extension line AB in the cross G.?#%#(1) Proof: $ AE \ cdot FD =AF \ cdot EC $; #%? # (2) Proof: $ FC =FB $; #% # (3) if $ FB =FE =2 $, $ ⊙O $ seek long radius r?.



graph:
{"stem":{"pictures":[{"picturename":"1000010785_Q_1.jpg","coordinates":{"A":"-2.82,0.00","B":"2.82,0.00","C":"0.93,2.66","D":"2.82,4.00","E":"0.93,1.33","F":"2.82,0.00","G":"8.53,0.00","H":"0.93,0.00","O":"0.00,0.00"},"collineations":{"0":"A###D###C","1":"A###E###F","2":"C###E###H","3":"D###F###B","4":"C###F###G","5":"A###O###H###B###G"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[{"substemid":"1","questionrelies":"2","pictures":[],"appliedproblems":{}},{"substemid":"2","questionrelies":"1","pictures":[],"appliedproblems":{}},{"substemid":"3","questionrelies":"2","pictures":[],"appliedproblems":{}}]}

NLP: DiameterRelation{diameter=AB, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, length=null},PointOnCircleRelation{circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, points=[C]},LinePerpRelation{line1=CH, line2=AB, crossPoint=H},MiddlePointOfSegmentRelation{middlePoint=E,segment=CH},LineCrossRelation [crossPoint=Optional.of(G), iLine1=CF, iLine2=AB],MultiEqualityRelation [multiExpressCompare=BF=EF=2, originExpressRelationList=[], keyWord=null, result=null],ProveConclusionRelation:[Proof: EqualityRelation{AE*DF=AF*CE}],ProveConclusionRelation:[Proof: EqualityRelation{CF=BF}]

283, topic: As shown in △ABC, △DEF in, AM, DN are two middle triangles, AB =DE, AC =DF, AM =DN Proof:. △ABC≌ △DEF #% # <img>

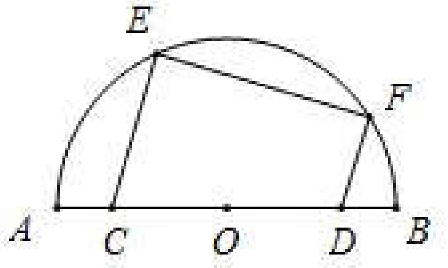


graph:
{"stem":{"pictures":[{"picturename":"1000035725_Q_1.jpg","coordinates":{"A":"0.00,2.04","B":"-1.83,0.00","C":"1.00,0.00","M":"-0.41,0.00","D":"0.00,-2.96","E":"-1.83,-5.00","F":"1.00,-5.00","N":"-0.41,-5.00"},

"collineations":{"0":"A###B","1":"B###M###C","2":"C###A","3":"M###A","4":"D###E","5":"E###N###F","6":"F###D","7":"N###D"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleRelation:△ABC,TriangleRelation:△DEF,EqualityRelation{AB=DE},EqualityRelation{AC=DF},EqualityRelation{AM=DN},MidianLineOfTriangleRelation{midianLine=AM, triangle=△ABC, top=A, bottom=BC},MidianLineOfTriangleRelation{midianLine=DN, triangle=△DEF, top=D, bottom=EF},ProveConclusionRelation:[Proof: TriangleCongRelation{triangleA=△ABC, triangleB=△DEF}]

284, topic: Given: FIG, AB is the diameter, EF chord, $ CE⊥EF $, $ DF⊥EF $, E, F verify pedal is:. $ AC =BD $.



graph: {"stem":{"pictures":[{"picturename":"1000025135.jpg","coordinates":{"A":"-5.00,0.00","B":"5.00,0.00","C":"-4.00,0.00","D":"4.00,0.00","E":"-3.00,4.00","F":"4.53,2.12","O":"0.00,0.00"},"collineations":{"0":"E###C","1":"F###D","2":"E###F","3":"B###A###D###C###O"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"B###A###E###F"}]}],"appliedproblems":{}},"substems":[]}

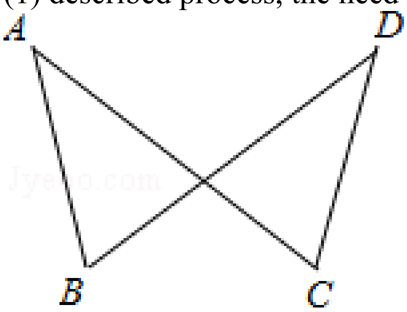
NLP: SegmentRelation:AB,ChordOfCircleRelation{chord=EF, circle=null, chordLength=null,straightLine=null},LinePerpRelation{line1=CE, line2=EF, crossPoint=E},LinePerpRelation{line1=DF, line2=EF, crossPoint=F},ProveConclusionRelation:[Proof: EqualityRelation{AC=BD}]

285, topic: FIG $, P $ square ABCD $ $ $ diagonal point on the BD $ $, PE⊥DC, PF⊥BC, E, F $ are pedal confirmation $:.. AP =EF $ #% # <img>#% #

graph:

NLP: SquareRelation{square=Square:ABCD},PointOnLineRelation{point=P, line=BD, isConstant=false, extension=false},LinePerpRelation{line1=PE, line2=DC, crossPoint=E},LinePerpRelation{line1=PF, line2=BC, crossPoint=F},ProveConclusionRelation:[Proof: EqualityRelation{AP=EF}]

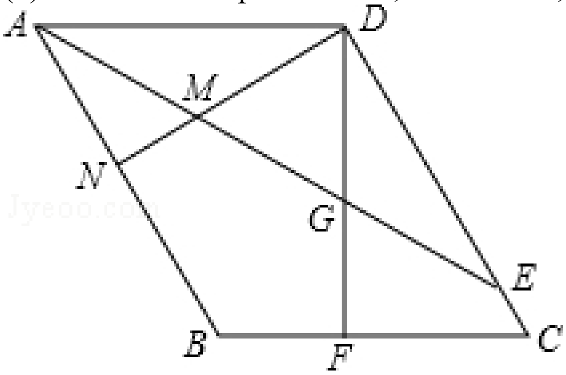
. 286, topic: FIG known AB =DC, BD =AC #% # (1) Test Description: ∠ABD =∠DCA; #% # (2) in (1) described process, the need for auxiliary line, what its purpose is? #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000029145_Q_1.jpg","coordinates":{"A":"3.00,8.00","B":"5.00,4.00","C":"9.00,4.00","D":"11.00,8.00"},"collineations":{"0":"C###A","1":"C###D","2":"B###D","3":"A###B"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: EqualityRelation{AB=CD},EqualityRelation{BD=AC},ProveConclusionRelation:[Proof: EqualityRelation{∠ABD=∠ACD}]

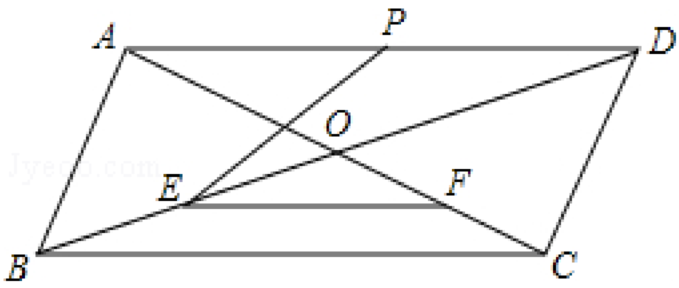
287, topic: FIG known in □ABCD, AE DC to AC bisecting ∠BAD E, DF⊥BC in F., In the cross-AE G, and AD =DF. DC through the point D as perpendicular, respectively, cross-AE, AB at point M, N. % # # (1) if M is the midpoint of AG, and DM =2, a long seek DE;% # # (2) Proof: AB =CF + DM. #% # <Img>



graph:
{"stem":{"pictures":[{"picturename":"1000041890_Q_1.jpg","coordinates":{"A":"0.21,3.36","B":"2.73,-0.31","C":"6.43,-0.26","D":"3.92,3.41","E":"6.01,0.36","F":"3.97,-0.29","G":"3.94,1.43","M":"2.28,2.29","N":"1.37,1.67"},"collineations":{"0":"A###N###B","1":"B###F###C","2":"C###E###D","3":"D###A","4":"A###M###G###E","5":"D###M###N","6":"D###G###F"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP:
ParallelogramRelation{parallelogram=Parallelogram:ABCD},AngleBisectorRelation{line=AE,angle=∠DAN, angle1=∠DAE, angle2=∠EAN},LineCrossRelation [crossPoint=Optional.of(E), iLine1=AE, iLine2=DC],LinePerpRelation{line1=DF, line2=BC, crossPoint=F},LineCrossRelation [crossPoint=Optional.of(G), iLine1=DF, iLine2=AE],EqualityRelation{AD=DF},LinePerpRelation{line1=ND, line2=DC, crossPoint=D},LineCrossRelation [crossPoint=Optional.of(N), iLine1=AB, iLine2=ND],LineCrossRelation [crossPoint=Optional.of(M), iLine1=AE, iLine2=ND],PointOnLineRelation{point=D, line=ND, isConstant=false, extension=false},EqualityRelation{DE=v_1},MiddlePointOfSegmentRelation{middlePoint=M,segment=AG},EqualityRelation{DM=2},Calculation:(ExpressRelation:[key:]v_1),SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]DE)},ProveConclusionRelation:[Proof: EqualityRelation{AB=CF+DM}]

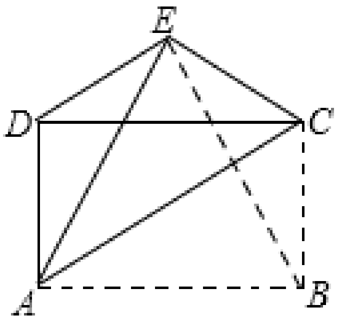
288, topic: the diagonal of the parallelogram ABCD at point O, E, F, P, respectively midpoint OB, OC, AD, and AC =2AB, Proof: . EP =EF #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000031978_Q_1.jpg","coordinates":{"A":"-13.00,6.00","B":"-15.00,3.00","C":"-6.42,3.03","D":"-4.42,6.03","E":"-12.36,3.76","F":"-8.07,3.77","O":"-9.71,4.51","P":"-8.71,6.01"},"collineations":{"0":"A###O###F###C","1":"B###E###O###D","2":"P###E","3":"E###F","4":"A###B","5":"D###P###A","6":"C###D","7":"C###B"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: ParallelogramRelation{parallelogram=Parallelogram:ABCD},MiddlePointOfSegmentRelation{middlePoint=E,segment=OB},MiddlePointOfSegmentRelation{middlePoint=F,segment=OC},MiddlePointOfSegmentRelation{middlePoint=P,segment=AD},EqualityRelation{AC=2*AB},ProveConclusionRelation:[Proof: EqualityRelation{EP=EF}]

289, topic: FIG., It is known in the rectangle ABCD, AB =2a, rectangular folded along the straight line AC, a point B falls at point E, is connected DE, BE, △ABE equilateral triangle #% # (1.) to find the distance CD point E to; #% # (2) find $ \ value frac {{{S} _ {\ vartriangle DCE}}} {{{S} _ {\ vartriangle ABE}}} $ a #. % # <img>

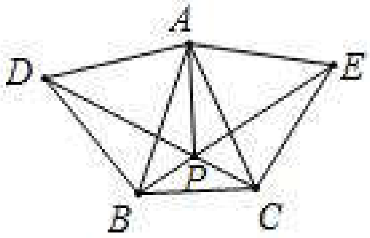


graph:
{"stem":{"pictures":[{"picturename":"1000027669_Q_1.jpg","coordinates":{"A":"-5.79,-0.79","B":"-0.79,-0.79","C":"-0.79,2.21","D":"-5.79,2.21","E":"-3.29,3.54"},"collineations":{"0":"D###A","1":"D###C","2":"E###D","3":"A###E","4":"A###C","5":"A###B","6":"C###B","7":"E###C","8":"E###B"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: RectangleRelation {rectangle =Rectangle: ABCD}, EqualityRelation {AB =2 * a}, RectangleRelation {rectangle =Rectangle: ABCD}, TurnoverRelation {start =B, segment =AC, target =E}, SegmentRelation: DE, SegmentRelation: BE, RegularTriangleRelation: RegularTriangle: △ABE, distance, seeking distance: PointToLineDistanceRelation {point =E, line =CD, distance =null}, evaluation (size) :(ExpressRelation: [key:] S_ △CDE) / S_ △ABE), SolutionConclusionRelation {relation =distance, seeking distance: PointToLineDistanceRelation {point =E, line =CD, distance =null}}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] S_ △CDE) / S_ △ABE)}

290, topic: As shown in the $ △ABC $, $ $ AB =AC, AB and AC, respectively to the outer sides of the triangle is an equilateral triangle as equilateral triangles ABD and the ACE, BE and connected CD.?#%# (1) Proof: $ BE =CD $; #% # (2) is provided with BE CD at point P, is connected AP, Proof: ? AP bisects

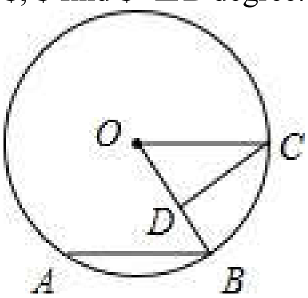
$ ∠DPE $ <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000021372_Q_1.jpg","coordinates":{"A":"1.00,2.00","B":"0.00,0.00","C":"2.00,0.00","D":"-1.23,1.87","E":"3.23,1.87","P":"1.00,0.58"},"collineations":{"0":"E###P###B","1":"A###P","2":"D###A","3":"A###B","4":"A###C","5":"P###C###D","6":"B###C","7":"D###B","8":"A###E","9":"C###E"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleRelation:△ABC,EqualityRelation{AB=AC},RegularTriangleRelation:RegularTriangle:△ABD,RegularTriangleRelation:RegularTriangle:△ACE,SegmentRelation:AB,SegmentRelation:AC,SegmentRelation:BE,SegmentRelation:CD,LineCrossRelation [crossPoint=Optional.of(P), iLine1=CD, iLine2=BE],SegmentRelation:AP,ProveConclusionRelation:[Proof: EqualityRelation{BE=CD}],ProveConclusionRelation:[Proof: AngleBisectorRelation{line=AP,angle=∠DPE, angle1=∠APD, angle2=∠APE}]

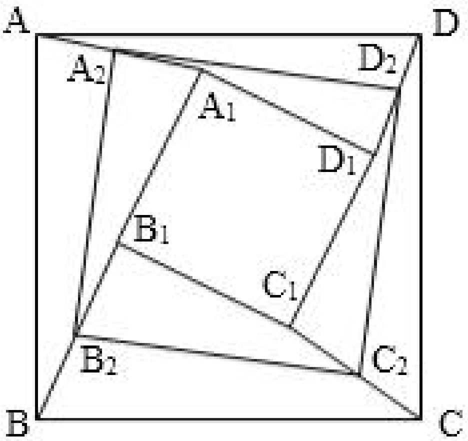
291, topic: FIG known points A, B, C in the $ ⊙O $, $ CD⊥OB $ to D, $ AB =2OD $, if $ ∠C =40 ° $, $ find $ ∠B degree.



graph:
{"stem":{"pictures":[{"picturename":"1000024902_Q_1.jpg","coordinates":{"A":"-7.38,2.23","B":"-4.57,2.27","C":"-3.76,3.97","D":"-5.07,2.88","O":"-6.00,4.00"},"collineations":{"0":"O###D###B","1":"A###B","2":"C###D","3":"O###C"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"C###B###A"}]}],"appliedproblems":{}},"substems":[]}

NLP: PointOnCircleRelation{circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, points=[A, B, C]},LinePerpRelation{line1=CD, line2=OB, crossPoint=D},EqualityRelation{AB=2*DO},EqualityRelation{∠DCO=(2/9*Pi)},Calculation:AngleRelation{angle=∠ABD},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]∠ABD)}

292, topic: FIG known quadrangle ABCD, $ {A_1} {B_1} {C_1} {D_1} $ are square, $ {A_2} $, $ {B_2} $, $ {C_2} $, $ { are D_2} $ $ a {A_1} $, $ {B_1 $, $ C {C_1} $, $ D {D_1} $ midpoint B} #% # confirmation: quadrilateral $ {A_2} {B_2} { C_2} {D_2} $ is a square.



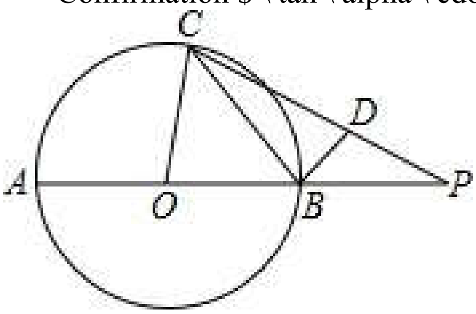
graph:
{"stem":{"pictures":[{"picturename":"1000010819_Q_1.jpg","coordinates":{"A":"1.00,7.00","B":"1.00,0.00","C":"8.00,0.00","D":"8.00,7.00","A[1]":"4.00,6.00","B[1]":"3.00,3.00","C[1]":"6.00,2.00","D[1]":"7.00,5.00","A[2]":"2.50,6.50","B[2]":"2.00,1.50","C[2]":"7.00,1.00","D[2]":"7.50,6.00"},"collineations":{"0":"B[2]###A[2]","1":"C[2]###B[2]","2":"D[2]###A[2]","3":"C[2]###D[2]","4":"B[1]###A[1]","5":"C[1]###B[1]","6":"D[1]###A[1]","7":"C[1]###D[1]","8":"B###A","9":"C###B","10":"D###A","11":"C###D","12":"A###A[1]###A[2]","13":"B###B[1]###B[2]","14":"C###C[1]###C[2]","15":"D###D[1]###D[2]"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP:
SquareRelation{square=Square:ABCD},SquareRelation{square=Square:A_1B_1C_1D_1},PointRelation:A_2,PointRelation:B_2,SegmentRelation:CC_1,ProveConclusionRelation:[Proof: SquareRelation{square=Square:A_2B_2C_2D_2}]

293, topic: FIG, AB is the diameter of ⊙O, AB extended to P, making $ BP =OB $,

BD perpendicular to the chord BC, pedal to point B, the point D on the PC. Provided $ \ angle PCB =\ alpha $, $ \ angle POC =\ beta $.

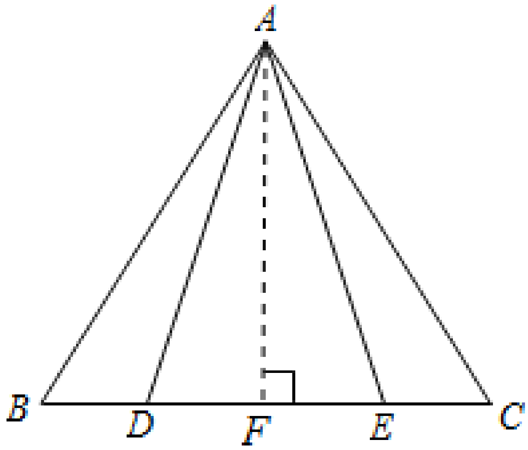
Confirmation $ \ tan \ alpha \ cdot tan \ frac {\ beta} {2} =\ frac {1} {3} $.



graph:
{"stem":{"pictures":[{"picturename":"1000010396_Q_1.jpg","coordinates":{"A":"-5.00,0.00","B":"5.00,0.00","C":"0.45,4.98","D":"6.07,2.05","O":"0.00,0.00","P":"10.00,0.00"},"collineations":{"0":"B###A###D###P","1":"C###O","2":"D###B","3":"C###D###P","4":"C###B"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"C###B###A"}]}],"appliedproblems":{}},"substems":[]}

NLP: ChordOfCircleRelation{chord=BC, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, chordLength=null,straightLine=null},DiameterRelation{diameter=AB, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, length=null},PointOnLineRelation{point=P, line=AB, isConstant=false, extension=true},EqualityRelation{BP=BO},LinePerpRelation{line1=BD, line2=BC, crossPoint=B},PointOnLineRelation{point=D, line=PC, isConstant=false, extension=false},EqualityRelation{∠BCD=α},EqualityRelation{∠POC=β},ProveConclusionRelation:[Proof: EqualityRelation{tan(α)*tan((β)/2)=(1/3)}]

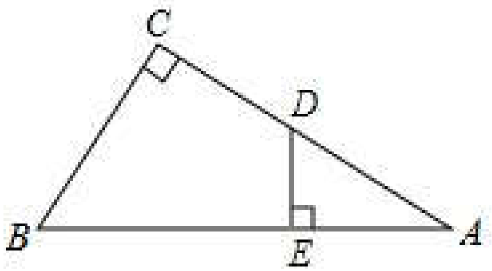
294, topic: FIG, points D and E on BC, AB =AC, AD =AE, BD reasons explained again established CE =(complete prompted the idea) Solution: A crosspoint for AF⊥BC , for the pedal F. #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000063611_Q_1.jpg","coordinates":{"A":"4.00,4.00","B":"0.00,0.00","C":"8.00,0.00","D":"2.00,0.00","E":"6.00,0.00","F":"4.00,0.00"},"collineations":{"0":"A###B","1":"A###D","2":"A###F","3":"A###E","4":"A###C","5":"B###D###F###E###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: PointOnLineRelation{point=D, line=BC, isConstant=false, extension=false},PointOnLineRelation{point=E, line=BC, isConstant=false, extension=false},EqualityRelation{AB=AC},EqualityRelation{AD=AE},LinePerpRelation{line1=AF, line2=BC, crossPoint=F},ProveConclusionRelation:[Proof: EqualityRelation{BD=CE}]

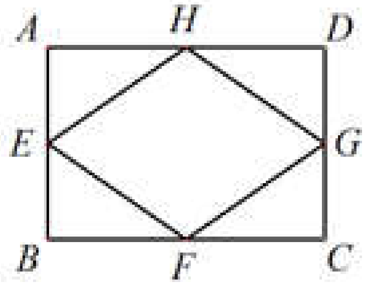
295, topic: FIG at $ \triangle ABC $ is known $ \angle C =90 ° $, D is the midpoint of the side AC, $ DE\perp AB $ Prove at point E:. $ {BC} ^ 2 ={BE} ^ 2- {AE} ^ 2 $.



graph:
{"stem":{"pictures":[{"picturename":"1000006749_Q_1.jpg","coordinates":{"A":"5.00,0.00","B":"0.00,0.00","C":"1.80,2.40","D":"3.40,1.20","E":"3.40,0.00"},"collineations":{"0":"A###B###E","1":"A###D###C","2":"B###C","3":"E###D"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleRelation:△ABC,EqualityRelation{∠BCD=(1/2*Pi)},MiddlePointOfSegmentRelation{middlePoint=D,segment=AC},LinePerpRelation{line1=DE, line2=AB, crossPoint=E},ProveConclusionRelation:[Proof: EqualityRelation{(BC)^2=(BE)^2-(AE)^2}]

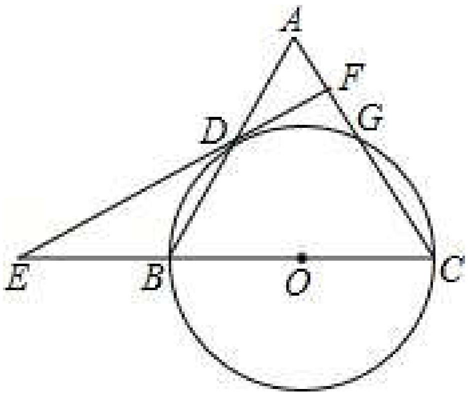
296, topic: FIG, known point $ E, F, G, H $ are rectangular ABCD $ $ $ AB side, midpoints BC, CD, DA $ Demonstrability: EFGH $ $ quadrilateral is a rhombus.? #% # <img>? #% #



graph:
{"stem":{"pictures":[{"picturename":"1000005408_Q_1.jpg","coordinates":{"A":"-5.50,5.77","B":"-5.50,1.01","C":"1.34,1.01","D":"1.34,5.77","E":"-5.50,3.39","F":"-2.08,1.01","G":"1.34,3.39","H":"-2.08,5.77"},"collineations":{"0":"A###E###B","1":"C###F###B","2":"A###H###D","3":"C###G###D","4":"F###E","5":"E###H","6":"H###G","7":"F###G"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP:
RectangleRelation{rectangle=Rectangle:ABCD},MiddlePointOfSegmentRelation{middlePoint=E,segment=AB},MiddlePointOfSegmentRelation{middlePoint=F,segment=BC},MiddlePointOfSegmentRelation{middlePoint=G,segment=CD},MiddlePointOfSegmentRelation{middlePoint=H,segment=DA},ProveConclusionRelation:[Proof: RhombusRelation{rhombus=Rhombus:EFGH}]

297, topic: As shown, the isosceles triangle ABC, $ AC =BC =10 $, $ AB =12 $ BC in diameter as $ ⊙O $ AB in the cross points D, cross AC at point G, $ DF. ⊥AC $, pedal is F, CB extension lines cross at point confirmation E.?#%#(1):? EF is a straight line tangent $ ⊙O $;% # # (2) find $ \ cos ∠E value of $.

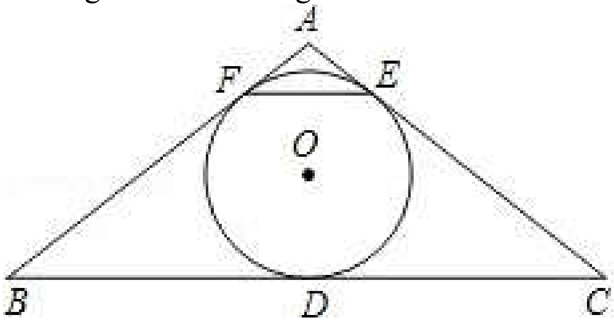


graph:
{"stem":{"pictures":[{"picturename":"1000026226_Q_1.jpg","coordinates":{"A":"2.20,9.60","B":"-5.00,0.00","C":"5.00,0.00","D":"-1.40,4.80","E":"-17.86,0.00","F":"3.21,6.14","G":"4.22,2.69","O":"0.00,0.00"},"collineations":{"0":"C###O###E###B","1":"C###G###A###F","2":"B###A###D","3":"E###F###D"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"B###C###D###G"}]}],"appliedproblems":{}},"substems":[]}

NLP: IsoscelesTriangleRelation:IsoscelesTriangle:△ABC[Optional.of(C)],MultiEqualityRelation [multiExpressCompare=AC=BC=10, originExpressRelationList=[], keyWord=null, result=null],EqualityRelation{AB=12},DiameterRelation{diameter=BC, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, length=null},LineCrossCircleRelation{line=AB, circle=⊙O, crossPoints=[D], crossPointNum=1},LineCrossCircleRelation{line=AC, circle=⊙O, crossPoints=[G],

crossPointNum=1},LinePerpRelation{line1=DF, line2=AC, crossPoint=F},LineCrossRelation [crossPoint=Optional.of(E), iLine1=DF, iLine2=CB],Calculation:(ExpressRelation:[key:]cos(∠BED)),ProveConclusionRelation:[Proof:　LineContactCircleRelation{line=EF, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, contactPoint=Optional.of(D), outpoint=Optional.absent()}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]cos(∠BED))}

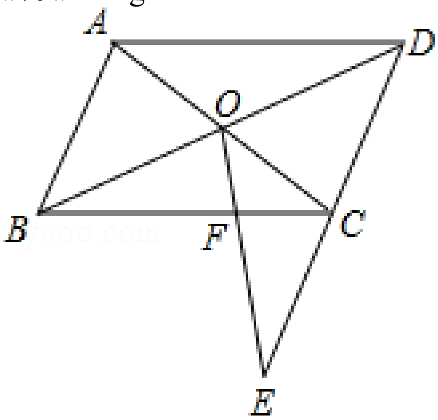
. 298, topic: As shown in the △ABC, AB =AC, the inscribed circle O and the side BC, AC, AB respectively tangent to D, E, F #% # (1) Proof:　BF =CE; #% # (2) if ∠C =30 °, $ CE =2 \ sqrt {3} $, seeking AC. #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000008275_Q_1.jpg","coordinates":{"A":"0.00,2.00","B":"-3.46,0.00","C":"3.46,0.00","E":"0.46,1.73","D":"0.00,0.00","F":"-0.46,1.73","O":"0.00,0.93"},"collineations":{"0":"A###E###C","1":"A###B###F","2":"B###D###C","3":"E###F"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"D###E###F"}]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleRelation: △ABC, EqualityRelation {AB =AC}, PointRelation: E, PointRelation: F, EqualityRelation {∠DCE =(1/6 * Pi)}, EqualityRelation {CE =2 * (3 ^ (1/2))}, the evaluator (size) :(ExpressRelation: [key:] AC), ProveConclusionRelation: [Proof:　EqualityRelation {BF =CE}], SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] AC)}

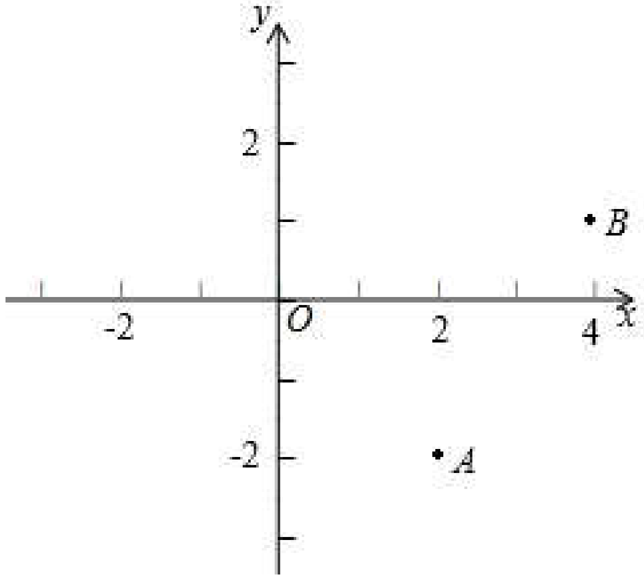
299, topic: As shown in □ABCD the diagonal AC and BD intersect at point O, point taken on the extension line E of the DC connection OE BC at point F. known AB =a, BC =b , CE =c, CF seeking long. #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000050808_Q_1.jpg","coordinates":{"A":"-6.00,6.00","B":"-8.00,3.00","C":"-4.00,3.00","D":"-2.00,6.00","E":"-4.83,1.76","F":"-4.91,3.00","O":"-5.00,4.50"},"collineations":{"0":"B###A","1":"A###D","2":"A###C###O","3":"B###O###D","4":"O###E###F","5":"B###C###F","6":"E###D###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: EqualityRelation{CF=v_0},ParallelogramRelation{parallelogram=Parallelogram:ABCD},LineCrossRelation [crossPoint=Optional.of(O), iLine1=AC, iLine2=BD],PointOnLineRelation{point=E, line=DC, isConstant=false, extension=true},LineCrossRelation [crossPoint=Optional.of(F), iLine1=OE, iLine2=BC],EqualityRelation{AB=a},EqualityRelation{BC=b},EqualityRelation{CE=c},Calculation:(ExpressRelation:[key:]v_0),SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]CF)}

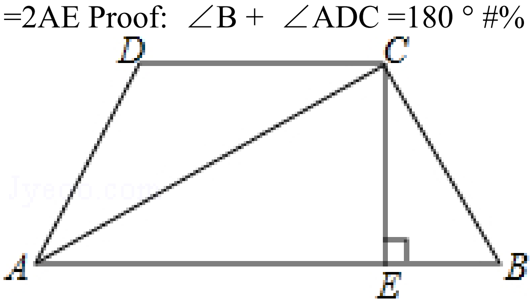
300, topic: FIG known two $ A (2, -2) $, $ B (4,1) $, y-axis point P is a point, minimum of $ PA + PB $.



graph:
{"stem":{"pictures":[{"picturename":"1000006956_Q_1.jpg","coordinates":{"A":"2.00,-2.00","B":"4.00,1.00","O":"0.00,0.00"},"collineations":{},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: PointRelation:A(2,-2),PointRelation:B(4,1),PointOnLineRelation{point=P, line=StraightLine[Y] analytic :x=0 slope: b: isLinearFunction:false, isConstant=false, extension=false},Minimum:(ExpressRelation:[key:]AP+BP),SolutionConclusionRelation{relation=Minimum:(ExpressRelation:[key:]AP+BP)}

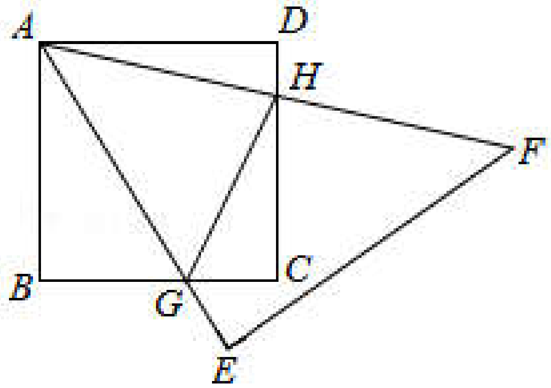
301, topic: As shown, the quadrangle ABCD, the AC bisecting ∠BAD, CE⊥AB at point E, AD + AB =2AE Proof: ∠B + ∠ADC =180 ° #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000031277_Q_1.jpg","coordinates":{"A":"-10.50,2.00","B":"0.00,2.00","C":"-3.00,6.00","D":"-7.99,5.74","E":"-3.00,2.00"},"collineations":{"0":"A###D","1":"A###E###B","2":"A###C","3":"B###C","4":"D###C","5":"E###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: known conditions QuadrilateralRelation {quadrilateral =ABCD}, AngleBisectorRelation {line =AC, angle =∠DAE, angle1 =∠CAD, angle2 =∠CAE}, LinePerpRelation {line1 =CE, line2 =AB, crossPoint =E}, EqualityRelation {AD + AB =2 * AE}, ProveConclusionRelation: [Proof: EqualityRelation {∠CBE + ∠ADC =(Pi)}]

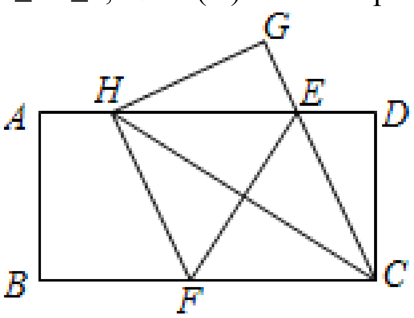
302, topic: FIG known square ABCD and right isosceles triangle AEF, ∠E =90 °, AE and BC at point G, AF, and CD at point H, the square area ABCD is 1 $ cm ^ { } $ 2, seeking △CGH perimeter. #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000030833_Q_1.jpg","coordinates":{"A":"-13.00,4.00","B":"-13.00,0.00","C":"-9.00,0.00","D":"-9.00,4.00","E":"-9.00,-2.00","F":"-3.00,2.00","G":"-10.33,0.00","H":"-9.00,3.20"},"collineations":{"0":"A###B","1":"B###C###G","2":"D###H###C","3":"A###D","4":"A###G###E","5":"E###F","6":"A###H###F","7":"G###H"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: EqualityRelation{C_△CGH=v_0},IsoscelesRightTriangleRelation:IsoscelesRightTriangle:IsoscelesTriangle:△AEF[Optional.of(E)][Optional.of(E)],SquareRelation{square=Square:ABCD},EqualityRelation{∠FEG=(1/2*Pi)},LineCrossRelation [crossPoint=Optional.of(G), iLine1=AE, iLine2=BC],LineCrossRelation [crossPoint=Optional.of(H), iLine1=AF, iLine2=CD],SquareRelation{square=Square:ABCD},EqualityRelation{S_ABCD=1},Calculation:(ExpressRelation:[key:]v_0),SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]C_△CGH)}

303, topic: as shown, in a rectangular sheet of ABCD, AB =4, BC =8, points E, F, respectively, in the AD, the BC, EF straight line along the folded sheet ABCD, point C falls on AD at point H, point D falls point G, Proof: % # # (1) a diamond quadrangular CFHE;% # # (2) is in the range of the line segment BF 3≤BF≤4; #% # (3) when the point A coincides with point H, $ EF =2 \ sqrt {5} $. #% # <img>

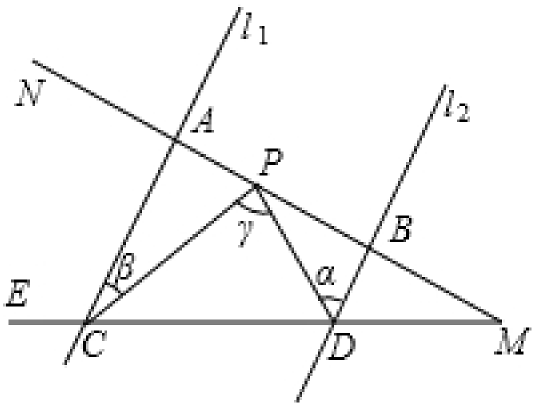


graph:
{"stem":{"pictures":[{"picturename":"1000061936_Q_1.jpg","coordinates":{"A":"0.00,4.00","B":"0.00,0.00

","C":"8.00,0.00","D":"8.00,4.00","E":"6.00,4.00","F":"3.53,0.00","G":"5.11,5.79","H":"1.53,4.00"},"collineations":{"0":"A###B","1":"C###D","2":"H###F","3":"E###F","4":"H###C","5":"H###G","6":"G###E###C","7":"B###F###C","8":"A###H###E###D"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: EqualityRelation{AB=4},EqualityRelation{BC=8},PointOnLineRelation{point=E, line=AD, isConstant=false, extension=false},PointOnLineRelation{point=F, line=BC, isConstant=false, extension=false},PointOnLineRelation{point=H, line=AD, isConstant=false, extension=false},SymmetricRelation{preData=C,afterData=H,symmetric=StraightLine[EF] analytic :y=k_EF*x+b_EF slope:null b:null isLinearFunction:false, pivot=},Know:QuadrilateralRelation{quadrilateral=ABCD},PointCoincidenceRelation{point1=D, point2=G},PointCoincidenceRelation{point1=H, point2=A},ProveConclusionRelation:[Proof: RhombusRelation{rhombus=Rhombus:CFHE}],ProveConclusionRelation:[Proof: EqualityRelation{EF=2*(5^(1/2))}]

304, topic: FIG known $ {{l} _ {1}} \ parallel {{l} _ {2}} $, MN, respectively, and linear $ {{l} _ {1}} $, $ { {l} _ {2}} $ intersect at points A, B, ME respectively straight $ {{l} _ {1}} $, $ {{l} _ {2}} $ intersect at points C, D. point P in the MN (points P and A, B, M three points do not overlap).% between # # (1) If the point P between A, B movement points, ∠α, ∠β, ∠γ What is the number of relationships? Please explain the reasons. #% # (2) What if the point P in the A, B two points outside the movement, ∠α, ∠β, ∠γ number of relationships? (Write only conclusion) #% # <img>



graph: {"stem":{"pictures":[{"picturename":"1000051252_Q_1.jpg","coordinates":{"A":"-7.37,4.70","B":"-5.69,3.35","C":"-8.00,2.00","D":"-6.00,2.00","E":"-9.00,2.00","M":"-4.00,2.00","N":"-9.00,6.00","P":"-6.46,3.97"},"collineations":{"0":"C###A","1":"C###P","2":"N###A###P###B###M","3":"P###D","4":"B###D","5":"E###C###D###M"},"variable-equals":{"0":"∠α=∠PDB","1":"∠β=∠ACP","2":"∠γ=∠CPD"},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: PointRelation:P,PointRelation:A,NegativeRelation{relation=PointCoincidenceRelation{point1=B, point2=M}},LineParallelRelation [iLine1=StraightLine[l_1] analytic :y=k_l_1*x+b_l_1 slope:null b:null isLinearFunction:false, iLine2=StraightLine[l_2] analytic :y=k_l_2*x+b_l_2 slope:null b:null isLinearFunction:false],LineCrossRelation [crossPoint=Optional.of(A), iLine1=MN, iLine2=StraightLine[l_1] analytic :y=k_l_1*x+b_l_1 slope:null b:null isLinearFunction:false],LineCrossRelation [crossPoint=Optional.of(B), iLine1=MN, iLine2=StraightLine[l_2] analytic :y=k_l_2*x+b_l_2 slope:null b:null isLinearFunction:false],LineCrossRelation [crossPoint=Optional.of(C), iLine1=ME, iLine2=StraightLine[l_1] analytic :y=k_l_1*x+b_l_1 slope:null b:null isLinearFunction:false],LineCrossRelation [crossPoint=Optional.of(D), iLine1=ME, iLine2=StraightLine[l_2] analytic :y=k_l_2*x+b_l_2 slope:null b:null isLinearFunction:false],PointOnLineRelation{point=P, line=MN, isConstant=false, extension=false},PointOnLineRelation{point=P, line=AB, isConstant=false, extension=false},Calculation:(ExpressRelation:[key:](∠α/∠β)),Calculation:(ExpressRelation:[key:](∠β/∠γ)),Calculation:(ExpressRelation:[key:](∠α/∠β)),Calculation:(ExpressRelation:[key:](∠β/∠γ)),SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:](∠α/∠β))},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:](∠β/∠γ))},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:](∠α/∠β))},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:](∠β/∠γ))}

305, topic: Given: As, Rt △ABC in, ∠ACB =90 °, D is the midpoint of AB, DE, DF respectively cross AC at point E, BC at point F, and DE⊥DF # % # (1) in FIG. 1, if CA =CB, Proof: $ {{AE} ^ {2}} + {{BF} ^ {2}} ={{EF} ^ {2}} $; #% # (2) shown in Figure 2, if CA <CB, (1) the conclusions set up if you set up, please prove;? If established, please explain the reason #% # <img>.

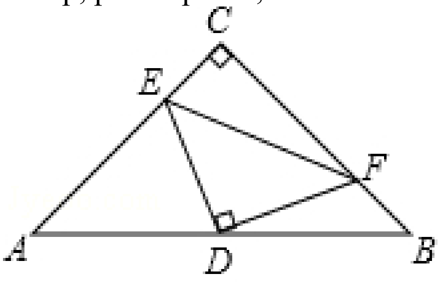


图1

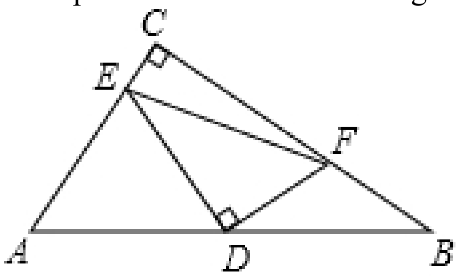
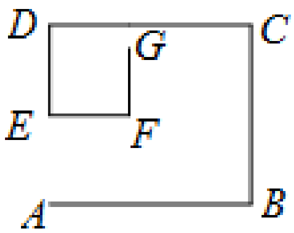


图2

graph:
{"stem":{"pictures":[],"appliedproblems":{}},"substems":[{"substemid":"1","questionrelies":"","pictures":[{"picturename":"1000031541_Q_1.jpg","coordinates":{"A":"-13.00,0.00","B":"-5.00,0.00","C":"-9.00,4.00","D":"-9.00,0.00","E":"-10.00,3.00","F":"-6.00,1.00"},"collineations":{"0":"A###D###B","1":"A###E###C","2":"B###F###C","3":"E###D","4":"F###E","5":"F###D"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},{"substemid":"2","questionrelies":"","pictures":[{"picturename":"1000031541_Q_2.jpg","coordinates":{"A":"0.00,0.00","B":"7.00,0.00","C":"2.73,3.41","D":"3.50,0.00","E":"2.00,2.50","F":"5.50,1.20"},"collineations":{"0":"A###D###B","1":"A###E###C","2":"B###F###C","3":"E###D","4":"F###E","5":"F###D"},"variable-equals":{},"circles":[]}],"appliedproblems":{}}]}

NLP: RightTriangleRelation:RightTriangle:△ABC[Optional.of(C)],EqualityRelation{∠ECF=(1/2*Pi)},MiddlePointOfSegmentRelation{middlePoint=D,segment=AB},LineCrossRelation[crossPoint=Optional.of(F), iLine1=DE, iLine2=BC],LinePerpRelation{line1=DE, line2=DF, crossPoint=D},(ExpressRelation:[key:]1),EqualityRelation{AC=BC},(ExpressRelation:[key:]2),InequalityRelation{AC<BC},ProveConclusionRelation:[Proof: EqualityRelation{((AE)^2)+((BF)^2)=((EF)^2)}]

306, topic: Given: FIG, DE∥GF, BC∥DE, EF∥DC, DC∥AB, confirmation: ∠B =∠F #% # <img>.

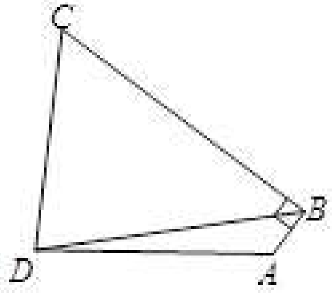


graph:
{"stem":{"pictures":[{"picturename":"1000051247_Q_1.jpg","coordinates":{"A":"-5.00,2.69","B":"-2.00,2.69","C":"-2.00,5.34","D":"-5.00,5.34","E":"-5.00,4.00","F":"-3.81,4.00","G":"-3.81,5.00"},"collineations":{"0":"D###C","1":"F###G","2":"E###D","3":"E###F","4":"A###B","5":"C###B"},"variable-equals":{},"cir

cles":[]}],"appliedproblems":{}},"substems":[]}

NLP: LineParallelRelation [iLine1=DE, iLine2=GF],LineParallelRelation [iLine1=BC, iLine2=DE],LineParallelRelation [iLine1=EF, iLine2=DC],LineParallelRelation [iLine1=DC, iLine2=AB],ProveConclusionRelation:[Proof: EqualityRelation{∠ABC=∠EFG}]

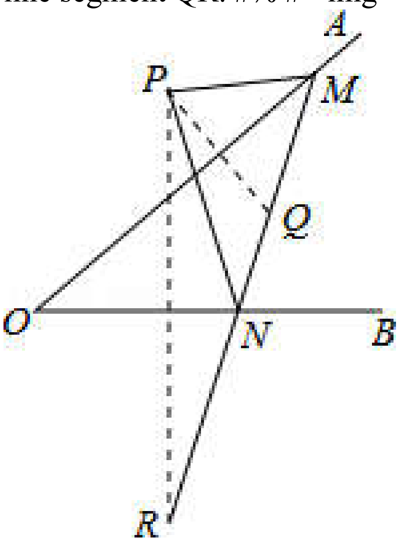
307, topic: FIG, BD is a diagonal line of the quadrilateral ABCD, $ AB⊥BC $, $ ∠C =60 ° $, $ AB =1 $, $ BC =3 + \ sqrt {3} $, $ CD =2 \ sqrt {3} $ #% # (1) $ ∠ABD $ required degree;.?? #% # (2) required a long AD.



graph:
{"stem":{"pictures":[{"picturename":"1000025919_Q_1.jpg","coordinates":{"A":"-2.00,0.00","B":"2.00,0.00","C":"5.00,0.00","D":"0.00,6.00"},"collineations":{"0":"D###A","1":"C###D","2":"B###C","3":"B###A"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: known conditions QuadrilateralRelation {quadrilateral =ABCD}, LinePerpRelation {line1 =AB, line2 =BC, crossPoint =B}, EqualityRelation {∠BCD =(1/3 * Pi)}, EqualityRelation {AB =1}, EqualityRelation { BC =3 + (3 ^ (1/2))}, EqualityRelation {CD =2 * (3 ^ (1/2))}, the size of the required angle: AngleRelation {angle =∠ABD}, EqualityRelation {AD =v_0 }, the evaluator (size) :(ExpressRelation: [key:] v_0), SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] ∠ABD)}, SolutionConclusionRelation {relation =evaluator (size): (ExpressRelation: [key:] AD)}

308, topic: FIG, point P is a point, the point M outside ∠AOB, N are the points on either side of ∠AOB, the point P symmetrical to the point Q OA falls exactly on a line MN, symmetrical about the point P of OB point R fall on an extension line of the MN. If PM =2.5cm, PN =3cm, MN =4cm, the length of the line segment QR. #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000030910_Q_1.jpg","coordinates":{"A":"-2.83,9.74","B":"-2.14,5.00","M":"-3.70,8.78","N":"-5.00,5.00","O":"-6.98,5.00","P":"-6.01,7.83","Q":"-4.52,6.42","R":"-5.98,2.16"},"collineations":{"0":"P###R","1":"P###N","2":"P###Q","3":"P###M","4":"O###N###B","5":"R###N###Q###M","6":"O###M###A"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: EqualityRelation{QR=v_0},PointOnLineRelation{point=M, line=AO, isConstant=false, extension=false},PointOnLineRelation{point=N, line=OB, isConstant=false, extension=false},SymmetricRelation{preData=P,afterData=Q,symmetric=StraightLine[AO] analytic :y=k_OA*x+b_OA slope:null b:null isLinearFunction:false, pivot=},PointOnLineRelation{point=Q, line=OA, isConstant=false, extension=false},SymmetricRelation{preData=P,afterData=R,symmetric=StraightLine[BO] analytic :y=k_OB*x+b_OB slope:null b:null isLinearFunction:false, pivot=},PointOnLineRelation{point=R, line=OB, isConstant=false, extension=false},EqualityRelation{MP=2.5},EqualityRelation{NP=3},EqualityRelation{MN=4},Calculation:(ExpressRelation:[key:]v_0),SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]QR)}

309, topic: 1, in the △ABC, ∠A =45 °, CB extended to points D, such that BD =BC #% # (1) if ∠ACB =90 °, Proof: . BD =AC; # % # (2) in FIG. 2, respectively through the points D and C as a straight line AB where the vertical line, respectively pedal points E, F, Proof: DE =AF; #% # (3) in FIG. 3, if the (1) "∠ACB =90 °" to "∠ACB =m °, and takes an extended line AB point G, so ∠1 =∠A". inquiry again segment AC, and the number of the positional relationship DG . #% # <img>

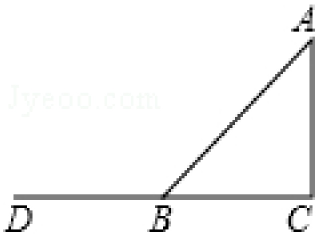


图1

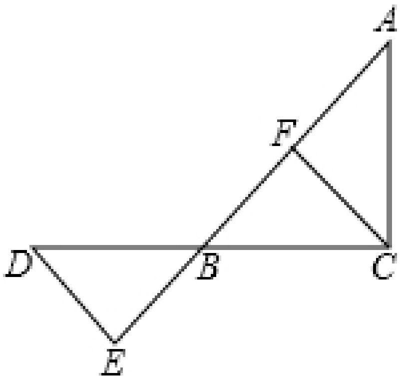


图2

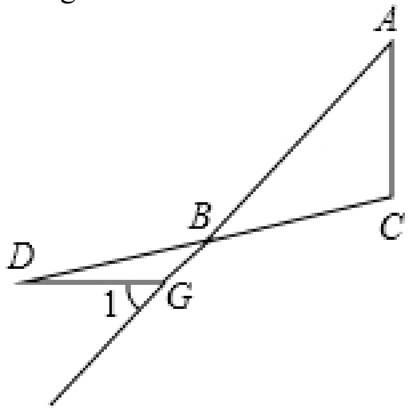
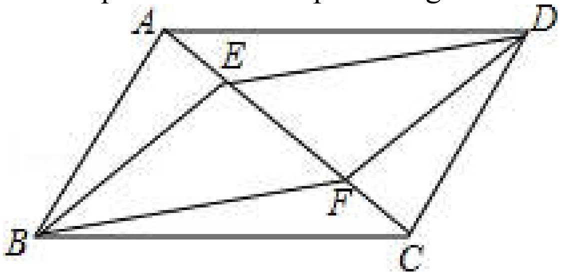


图3

graph:
{"stem":{"pictures":[],"appliedproblems":{}},"substems":[{"substemid":"1","questionrelies":"","pictures":[{"picturename":"1000031165_Q_1.jpg","coordinates":{"A":"-8.00,5.00","B":"-10.00,3.00","C":"-8.00,3.00","D":"-12.00,3.00"},"collineations":{"0":"C###A","1":"A###B","2":"C###B###D"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},{"substemid":"2","questionrelies":"1","pictures":[{"picturename":"1000031165_Q_2.jpg","coordinates":{"E":"-11.05,1.95","F":"-9.00,4.00"},"collineations":{"0":"A###F###B###E","1":"D###E"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},{"substemid":"3","questionrelies":"","pictures":[{"picturename":"1000031165_Q_3.jpg","coordinates":{"A":"-9.00,-2.00","B":"-11.56,-4.56","C":"-9.00,-4.00","D":"-14.11,-5.11","G":"-12.11,-5.11","I":"-13.00,-6.00"},"collineations":{"0":"A###B###G###I","1":"D###B###C","2":"D###G","3":"A###C"},"variable-equals":{"0":"∠1=∠DGI"},"circles":[]}],"appliedproblems":{}}]}

NLP: TriangleRelation:△ABC,EqualityRelation{∠A=(1/4*Pi)},PointOnLineRelation{point=D, line=CB, isConstant=false, extension=true},EqualityRelation{BD=BC},EqualityRelation{∠ACB=(1/2*Pi)},(ExpressRelation:[key:]2),LinePerpRelation{line1=AB, line2=DE, crossPoint=E},LinePerpRelation{line1=AB, line2=CF, crossPoint=F},PointOnLineRelation{point=D, line=DE, isConstant=false, extension=false},PointOnLineRelation{point=C, line=CF, isConstant=false, extension=false},(ExpressRelation:[key:]3),PointOnLineRelation{point=G, line=AB, isConstant=false, extension=false},EqualityRelation{∠1=∠A"},Calculation:(ExpressRelation:[key:](AC/DG)),ProveConclusionRelation:[Proof: EqualityRelation{BD=AC}],ProveConclusionRelation:[Proof: EqualityRelation{DE=AF}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:](AC/DG))},JudgePostionConclusionRelation: [data1=AC, data2=DG]

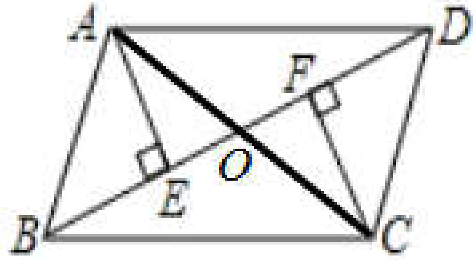
310, topic: Given: As in the parallelogram ABCD, the points E, F on the AC, and AE =CF #% # Proof: BEDF quadrilateral is a parallelogram #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000031889_Q_1.jpg","coordinates":{"A":"-7.00,5.00","B":"-9.00,2.00","C":"-4.00,2.00","D":"-2.00,5.00","E":"-6.25,4.25","F":"-4.75,2.75"},"collineations":{"0":"A###D","1":"A###B","2":"A###C","3":"B###C","4":"C###D","5":"B###E","6":"B###F","7":"E###D","8":"F###D"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: ParallelogramRelation{parallelogram=Parallelogram:ABCD},PointOnLineRelation{point=E, line=AC, isConstant=false, extension=false},PointOnLineRelation{point=F, line=AC, isConstant=false, extension=false},EqualityRelation{AE=CF},ProveConclusionRelation:[Proof: ParallelogramRelation{parallelogram=Parallelogram:BEDF}]

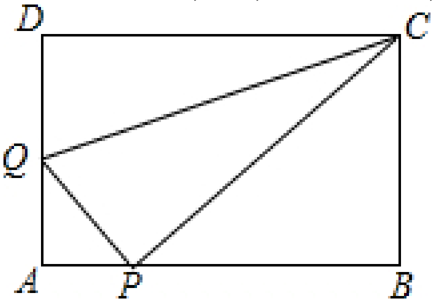
311, topic: As shown, the quadrilateral ABCD, AB =CD, BF =DE, AE⊥BD, CF⊥BD, pedal respectively E, F #% # (1) Prove:. △ABE≌ △CDF; #% # (2) when the AC and BD intersect at point O, Proof: AO =CO #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000034181_Q_1.jpg","coordinates":{"A":"-14.00,6.00","B":"-16.00,3.00","C":"-12.00,3.00","D":"-10.00,6.00","E":"-13.20,4.40","F":"-12.80,4.60"},"collineations":{"0":"B###E###F###D","1":"A###E","2":"E###C","3":"A###F","4":"F###C","5":"A###B","6":"A###D","7":"C###D","8":"B###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[{"substemid":"1","questionrelies":"","pictures":[{"picturename":"1000034181_Q_1.jpg","coordinates":{"O":"-13.00,4.50"},"collineations":{"0":"A###O###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}}]}

NLP: Know:QuadrilateralRelation{quadrilateral=ABCD},EqualityRelation{AB=CD},EqualityRelation{BF=DE},LinePerpRelation{line1=AE, line2=BD, crossPoint=E},LinePerpRelation{line1=CF, line2=BD, crossPoint=F},LineCrossRelation [crossPoint=Optional.of(O), iLine1=AC, iLine2=BD],ProveConclusionRelation:[Proof: TriangleCongRelation{triangleA=△ABE, triangleB=△CDF}],ProveConclusionRelation:[Proof: EqualityRelation{AO=CO}]

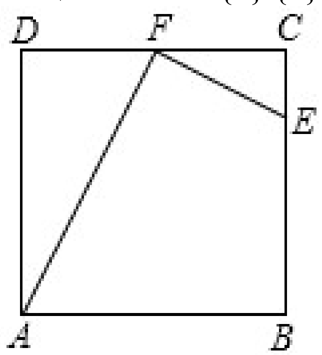
312, topic: As shown in the rectangle ABCD, AB =5, AD =3, point P is a point on the edge AB (not with A, B overlap), the CP is connected, through the point P to the side AD as the cross PQ⊥CP point Q, is connected CQ #% # (1) when △CDQ≌ △CPQ, the rectification of AQ; midpoint M #% # (2) take CQ connected MD, MP, if MD⊥MP, seeking AQ long. #% # <img>



graph:
{"stem":{"pictures":[],"appliedproblems":{}},"substems":[{"substemid":"1","questionrelies":"","pictures":[{"picturename":"1000061895_Q_1.jpg","coordinates":{"A":"4.00,3.00","B":"9.00,3.00","C":"9.00,6.00","D":"4.00,6.00","P":"5.00,3.00","Q":"4.00,4.33"},"collineations":{"0":"A###P###B","1":"B###C","2":"C###D","3":"D###Q###A","4":"C###Q","5":"C###P","6":"Q###P"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},{"substemid":"2","questionrelies":"","pictures":[{"picturename":"1000061895_Q_1.jpg","coordinates":{"A":"12.00,3.00","B":"17.00,3.00","C":"17.00,6.00","D":"12.00,6.00","M":"14.50,5.50","P":"14.00,3.00","Q":"12.00,5.00"},"collineations":{"0":"A###P###B","1":"B###C","2":"C###D","3":"D###Q###A","4":"C###M###Q","5":"C###P","6":"D###M","7":"Q###P","8":"P###M"},"variable-equals":{},"circles":[]}],"appliedproblems":{}}]}

NLP:
PointRelation:A,PointRelation:B,RectangleRelation{rectangle=Rectangle:ABCD},EqualityRelation{AB=5},EqualityRelation{AD=3},PointOnLineRelation{point=P, line=AB, isConstant=false, extension=false},SegmentRelation:CP,LineCrossRelation [crossPoint=Optional.of(Q), iLine1=PQ, iLine2=AD],LinePerpRelation{line1=PQ, line2=CP, crossPoint=P},SegmentRelation:CQ,EqualityRelation{AQ=v_0},TriangleCongRelation{triangleA=△CDQ, triangleB=△CPQ},Calculation:(ExpressRelation:[key:]v_0),MiddlePointOfSegmentRelation{middlePoint=M,segment=CQ},EqualityRelation{AQ=v_1},PointRelation:M,SegmentRelation:MD,SegmentRelation:MP,LinePerpRelation{line1=MD, line2=MP, crossPoint=M},Calculation:(ExpressRelation:[key:]v_1),SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]AQ)},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]AQ)}

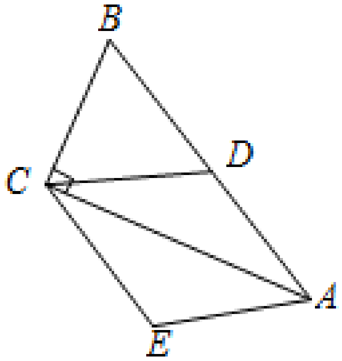
313, topic: As shown in the square ABCD, the point F is the mid-point of DC, E is the edge point BC, and $ EC =\ frac {1} {4} BC $, Proof: $ AF \ bot EF $.



graph:
{"stem":{"pictures":[{"picturename":"1000007025_Q_1.jpg","coordinates":{"A":"0.00,0.00","B":"4.00,0.00","C":"4.00,4.00","D":"0.00,4.00","E":"4.00,3.00","F":"2.00,4.00"},"collineations":{"0":"A###F","1":"D###C###F","2":"C###E###B","3":"A###B","4":"E###F"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP:
SquareRelation{square=Square:ABCD},MiddlePointOfSegmentRelation{middlePoint=F,segment=DC},PointOnLineRelation{point=E, line=BC, isConstant=false, extension=false},EqualityRelation{CE=(1/4)*BC},ProveConclusionRelation:[Proof: LinePerpRelation{line1=AF, line2=EF, crossPoint=F}]

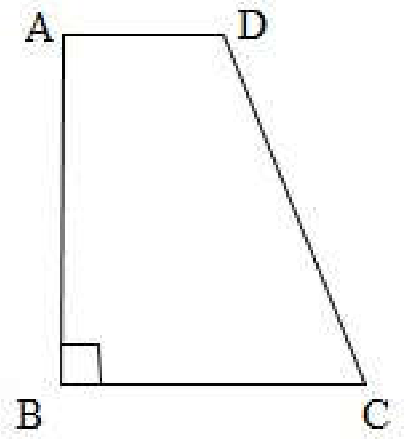
314, topic: As shown in the Rt △ABC, ∠ACB =90 °, D is the midpoint of AB, and AE // CD, CE // AB #% # (1) Proof: a diamond quadrangular ADCE; #% # (2) if ∠B =60 °, BC =6, the required high diamond ADCE. #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000061883_Q_1.jpg","coordinates":{"A":"10.65,2.67","B":"7.34,7.68","C":"6.00,5.00","D":"9.00,5.18","E":"7.65,2.50"},"collineations":{"0":"A###D###B","1":"B###C","2":"C###E","3":"E###A","4":"C###D","5":"C###A"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: RightTriangleRelation:RightTriangle:△ABC[Optional.of(C)],EqualityRelation{∠ACB=(1/2*Pi)},MiddlePointOfSegmentRelation{middlePoint=D,segment=AB},LineParallelRelation [iLine1=AE, iLine2=CD],LineParallelRelation [iLine1=CE, iLine2=AB],EqualityRelation{∠CBD=(1/3*Pi)},EqualityRelation{BC=6},Calculation:(ExpressRelation:[key:]v_0),ProveConclusionRelation:[Proof: RhombusRelation{rhombus=Rhombus:ADCE}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]v_0)}

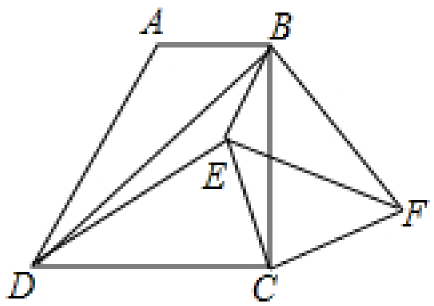
315, topic: as shown in the right trapezoid ABCD, $ AD // BC $, $ AB⊥BC $, $ AD =1 $, $ BC =3 $, $ CD =4 $ confirmation: the diameter of a CD and AB is tangent to the circle.



graph:
{"stem":{"pictures":[{"picturename":"1000008246_Q_1.jpg","coordinates":{"A":"0.00,3.46","B":"0.00,0.00","C":"3.00,0.00","D":"1.00,3.46"},"collineations":{"0":"D###C","1":"D###A","2":"A###B","3":"B###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: DiameterRelation{diameter=CD, circle=Circle[⊙O_0]{center=O_0, analytic=(x-x_O_0)^2+(y-y_O_0)^2=r_O_0^2}, length=null},RightTrapezoidRelation{rightTrapezoid=RightTrapezoid:ABCD randomOrder:true},LineParallelRelation [iLine1=AD, iLine2=BC],LinePerpRelation{line1=AB, line2=BC, crossPoint=B},EqualityRelation{AD=1},EqualityRelation{BC=3},EqualityRelation{CD=4},ProveConclusionRelation:[Proof: LineContactCircleRelation{line=AB, circle=Circle[⊙O_0]{center=O_0, analytic=(x-x_O_0)^2+(y-y_O_0)^2=r_O_0^2}, contactPoint=Optional.absent(), outpoint=Optional.absent()}]

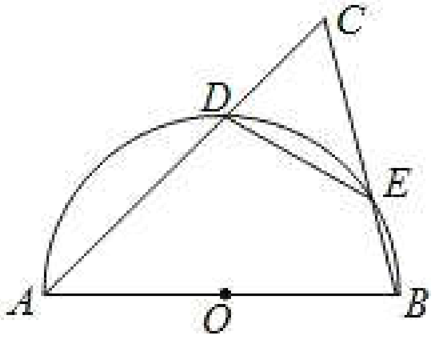
316, topic: As shown, the quadrilateral ABCD, AB // CD, ∠ECF =∠BCD =90 °, CE =CF =5, BC =7, BD bisects ∠ABC #% # E is the BCD △point. F is an outer quadrilateral ABCD point (E sides may △BCD) #% # (1) Prove:.. DC =BC #% # (2) if ∠BEC =135 °, is provided bE =a, DE =b , find a and b satisfy the relationship. #% # (3) when E falls on the BD line, DE seeking long. #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000042327.jpg","coordinates":{"A":"3.00,7.00","B":"7.00,7.00","C":"7.00,0.00","D":"0.00,0.00","E":"4.00,4.00","F":"11.00,3.00"},"collineations":{"0":"A###B","1":"D###C","2":"C###B","3":"A###D","4":"B###D","5":"B###E","6":"C###E","7":"D###E","8":"B###F","9":"F###E","10":"C###F"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: Know:QuadrilateralRelation{quadrilateral=ABCD},LineParallelRelation [iLine1=AB, iLine2=CD],MultiEqualityRelation [multiExpressCompare=∠ECF=∠BCD=(1/2*Pi), originExpressRelationList=[], keyWord=null, result=null],MultiEqualityRelation [multiExpressCompare=CE=CF=5, originExpressRelationList=[], keyWord=null, result=null],EqualityRelation{BC=7},AngleBisectorRelation{line=BD,angle=∠ABC, angle1=∠ABD, angle2=∠CBD},PositionOfPoint2RegionRelation{point=E, region=EnclosedRegionRelation{name=BCD, closedShape=△BCD}, position=border},TriangleRelation:△BCD,PositionOfPoint2RegionRelation{point=E, region=EnclosedRegionRelation{name=BCD, closedShape=△BCD}, position=inner},PositionOfPoint2RegionRelation{point=F, region=EnclosedRegionRelation{name=ABCD, closedShape=ABCD}, position=outer},EqualityRelation{∠BEC=(3/4*Pi)},EqualityRelation{BE=a},EqualityRelation{DE=b},DualExpressRelation:DualExpressRelation{expresses=[Express:[a], Express:[b]]},EqualityRelation{DE=v_0},PointOnLineRelation{point=E, line=BD, isConstant=false, extension=false},Calculation:(ExpressRelation:[key:]v_0),ProveConclusionRelation:[Proof: EqualityRelation{CD=BC}],SolutionConclusionRelation{relation=DualExpressRelation:DualExpressRelation{expresses=[Express:[a], Express:[b]]}},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]DE)}

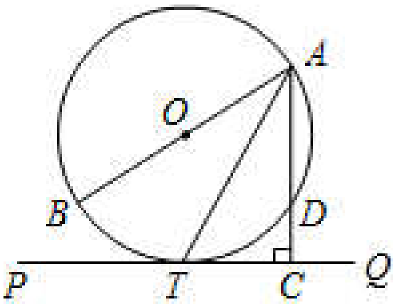
317, topic: As shown in the △ABC, ∠C =60 °, to AB is O-diameter semicircular cross each AC, BC at point D, E, known ⊙O radius of $ 2 \ sqrt {3} $. #% # (1) Proof: △CDE∽ △CBA; #% # (2) required a long DE #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000080953_Q_1.jpg","coordinates":{"A":"-4.13,-0.43","B":"2.78,0.06","C":"1.48,5.08","D":"-0.37,3.26","E":"2.46,1.27","O":"-0.68,-0.19"},"collineations":{"0":"A###O###B","1":"A###D###C","2":"C###E###B","3":"D###E"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"A###B###E###D"}]}],"appliedproblems":{}},"substems":[]}

NLP: DiameterRelation{diameter=AB, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, length=null},TriangleRelation:△ABC,EqualityRelation{∠DCE=(1/3*Pi)},LineCrossCircleRelation{line=AC, circle=⊙O, crossPoints=[D], crossPointNum=1},LineCrossCircleRelation{line=BC, circle=⊙O, crossPoints=[E], crossPointNum=1},RadiusRelation{radius=null, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, length=Express:[2*(3^(1/2))]},EqualityRelation{DE=v_0},Calculation:(ExpressRelation:[key:]v_0),ProveConclusionRelation:[Proof: TriangleSimilarRelation{triangleA=△CDE, triangleB=△CBA}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]DE)}

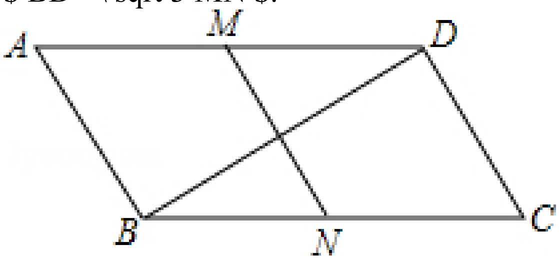
318, topic: FIG, AB is a $ \ odot O $ diameter, PQ cut $ \ odot O $ at point T, AC⊥PQ at points C, pay $ \ odot O $ at point D #% # (1.) Proof: AT bisecting ∠BAC; #% # (2) when AD =2, $ TC =\ sqrt {3} $, $ seeking \ radius of odot O $ #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000060755_Q_1.jpg","coordinates":{"A":"1.74,3.01","B":"-1.74,1.00","C":"1.75,0.00","D":"1.75,1.01","T":"0.00,0.00","O":"0.00,2.01","P":"-3.00,0.00","Q":"3.00,0.00"},"collineations":{"0":"A###O###B","1":"A###D###C","2":"P###T###C###Q","3":"A###T"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"A###D###T###B"}]}],"appliedproblems":{}},"substems":[]}

NLP: DiameterRelation{diameter=AB, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, length=null},LineContactCircleRelation{line=PQ, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, contactPoint=Optional.of(T), outpoint=Optional.absent()},LinePerpRelation{line1=AC, line2=PQ, crossPoint=C},LineCrossCircleRelation{line=AC, circle=⊙O, crossPoints=[D], crossPointNum=1},EqualityRelation{AD=2},EqualityRelation{CT=(3^(1/2))},圆的半径：CircleRelation{circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}},ProveConclusionRelation:[Proof: AngleBisectorRelation{line=AT,angle=∠DAO, angle1=∠DAT, angle2=∠OAT}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]AO)}

319, topic: as shown in the parallelogram ABCD, $ \ angle C =60 ^ \ circ $, M, N are the AD, BC is the midpoint, $ BC =2CD $ #% # (1) confirmation.? : MNCD quadrilateral is a parallelogram; #% # (2) Prove:? $ BD =\ sqrt 3 MN $.

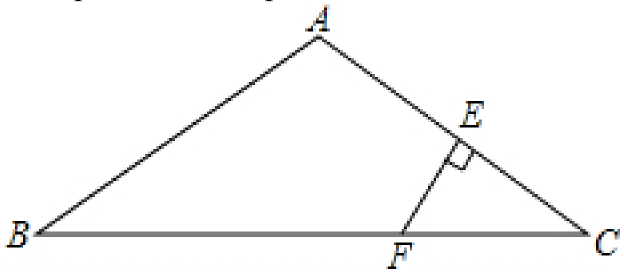


graph:
{"stem":{"pictures":[{"picturename":"1000010825_Q_1.jpg","coordinates":{"A":"-1.50,4.33","B":"1.00,0.00","C":"11.00,0.00","D":"8.50,4.33","M":"3.50,4.33","N":"6.00,0.00"},"collineations":{"0":"A###B","1":"D###B","2":"N###M","3":"B###N###C","4":"D###M###A","5":"C###D"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[{"substemid":"1","questionrelies":"","pictures":[],"appliedproblems":{}},{"substemid":"2","questionrelies":"1","pictures":[],"appliedproblems":{}}]}

NLP: ParallelogramRelation{parallelogram=Parallelogram:ABCD},EqualityRelation{∠DCN=(1/3*Pi)},MiddlePointOfSegmentRelation{middlePoint=M,segment=AD},MiddlePointOfSegmentRelation{middlePoint=N,segment=BC},EqualityRelation{BC=2*CD},ProveConclusionRelation:[Proof: ParallelogramRelation{parallelogram=Parallelogram:CDMN}],ProveConclusionRelation:[Proof: EqualityRelation{BD=(3^(1/2))*MN}]

320, topic: FIG., It is known in △ABC, AB =AC, ∠BAC =120 °, AC perpendicular bisector EF cross

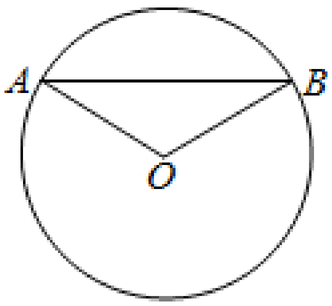
AC at point E, BC at point F., Proof: BF =2CF #%. # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000028103_Q_1.jpg","coordinates":{"A":"4.00,2.31","B":"0.00,0.00","C":"8.00,0.00","E":"6.00,1.16","F":"5.32,0.00"},"collineations":{"0":"A###B","1":"A###E###C","2":"B###F###C","3":"E###F"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: MiddlePerpendicularRelation [iLine1=EF, iLine2=AC, crossPoint=Optional.of(E)],TriangleRelation:△ABC,EqualityRelation{AB=AC},EqualityRelation{∠BAE=(2/3*Pi)},LineCrossRelation [crossPoint=Optional.of(E), iLine1=EF, iLine2=AC],LineCrossRelation [crossPoint=Optional.of(F), iLine1=EF, iLine2=BC],ProveConclusionRelation:[Proof: EqualityRelation{BF=2*CF}]

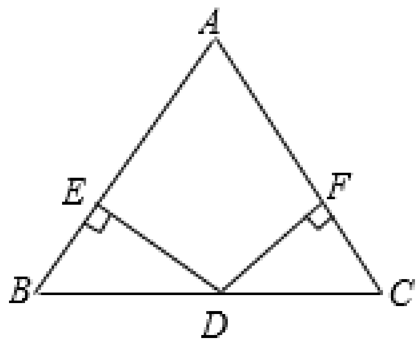
321, topic: FIG, chord known ⊙O AB is the radius OA =20cm, ∠O =120 °, △seeking the AOB area #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000083396_Q_1.jpg","coordinates":{"A":"-1.73,1.00","B":"1.73,1.00","O":"0.00,0.00"},"collineations":{"0":"A###B","1":"A###O","2":"B###O"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"A###B"}]}],"appliedproblems":{}},"substems":[]}

NLP: EqualityRelation{S_△ABO=v_0},ChordOfCircleRelation{chord=AB, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, chordLength=null,straightLine=null},RadiusRelation{radius=OA, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, length=Express:[20]},EqualityRelation{∠AOB=(2/3*Pi)},Calculation:(ExpressRelation:[key:]v_0),SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]S_△ABO)}

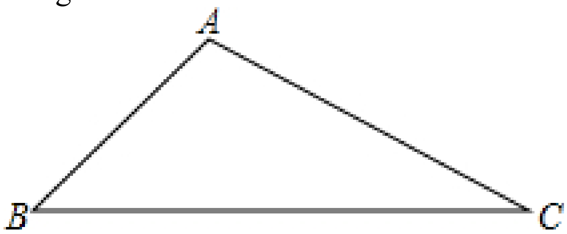
322, topic: FIG: the known △ABC, ∠B =∠C, D is the midpoint of the side BC, through the point D as $ DE \ bot AB $, $ DF \ bot AC $ E respectively Pedal ., F #% # (1) Proof: △BED≌ △CFD; #% # bisector (2) in a point D ∠A it? If the Please explain the reasons. #% # <Img>



graph:
{"stem":{"pictures":[{"picturename":"1000040794_Q_1.jpg","coordinates":{"A":"-2.27,3.39","B":"-5.27,-1.01","C":"0.73,-1.01","D":"-2.27,-1.01","E":"-4.31,0.39","F":"-0.22,0.39"},"collineations":{"0":"A###E###B","1":"F###C###A","2":"E###D","3":"B###D###C","4":"F###D"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: EqualityRelation{∠DBE=∠DCF},MiddlePointOfSegmentRelation{middlePoint=D,segment=BC},LinePerpRelation{line1=DE, line2=AB, crossPoint=E},LinePerpRelation{line1=DF, line2=AC, crossPoint=F},ProveConclusionRelation:[Proof: TriangleCongRelation{triangleA=△BED, triangleB=△CFD}],ProveConclusionRelation:[AngleBisectorRelation{line=DA,angle=∠EAF, angle1=∠DAE, angle2=∠DAF}]

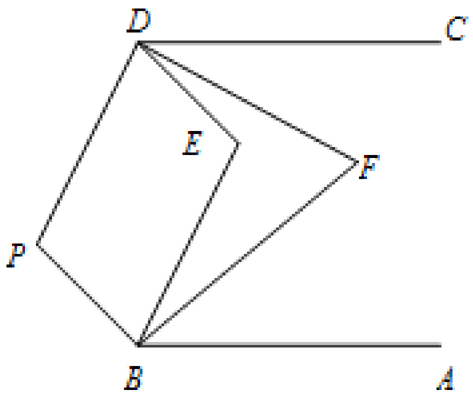
323, topic: As shown in the △ABC, ∠B =45 °, ∠C =30 °, $ AB =\ sqrt {2} $, long seeking AC #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000063685_Q_1.jpg","coordinates":{"A":"0.00,1.00","B":"-1.00,0.00","C":"1.73,0.00"},"collineations":{"0":"B###A","1":"C###A","2":"C###B"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: EqualityRelation{AC=v_0},TriangleRelation:△ABC,EqualityRelation{∠ABC=(1/4*Pi)},EqualityRelation{∠ACB=(1/6*Pi)},EqualityRelation{AB=(2^(1/2))},Calculation:(ExpressRelation:[key:]v_0[v_0=v_0]),SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]AC)}

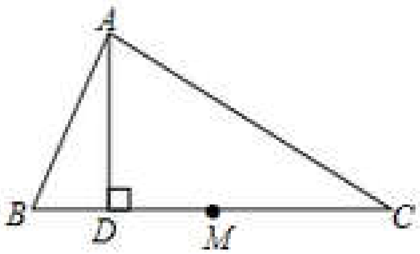
324, topic: FIG known AB∥CD, ∠ABP and ∠CDP bisectors intersect at point E, ∠ABE and ∠CDE bisectors intersect at point F #% # (1) if ∠CDF =21. °, ∠ABF =33 °, the required degree ∠DPB;% # # (2) if ∠BFD =54 °, and seeking ∠BPD degree ∠BED #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000037547_Q_1.jpg","coordinates":{"A":"-4.00,2.00","B":"-9.00,2.00","C":"-4.00,6.00","D":"-11.11,6.00","E":"-8.33,3.50","F":"-5.91,4.00","P":"-10.91,4.12"},"collineations":{"0":"C###D","1":"D###P","2":"P###B","3":"B###A","4":"E###D","5":"B###E","6":"F###D","7":"B###F"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: AngleBisectorRelation {line =BE, angle =∠ABP, angle1 =∠ABE, angle2 =∠EBP}, AngleBisectorRelation {line =DE, angle =∠CDP, angle1 =∠CDE, angle2 =∠EDP}, AngleBisectorRelation {line =BF, angle =∠ABE, angle1 =∠ABF, angle2 =∠EBF}, AngleBisectorRelation {line =DF, angle =∠CDE, angle1 =∠CDF, angle2 =∠EDF}, LineParallelRelation [iLine1 =AB, iLine2 =CD] , EqualityRelation {∠CDF =(7/60 * Pi)}, EqualityRelation {∠ABF =(11/60 * Pi)}, the size of the required angle: AngleRelation {angle =∠BPD}, EqualityRelation {∠BFD =(3 / 10 * Pi)}, find the size of the angle: AngleRelation {angle =∠BPD}, aNGULAR size: AngleRelation {angle =∠BED}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] ∠ BPD)}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] ∠BPD)}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] ∠BED)}

325, topic: As shown in the triangle ABC, $ \ angle B =2 \ angle C $, AD is the height of the triangle, point M is the midpoint of the side BC Proof: $ DM =\ frac {1} {2 } AB $. #% # <img>

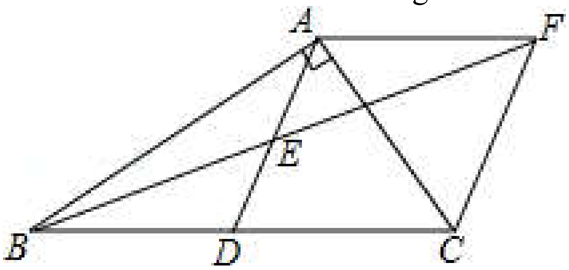


graph:
{"stem":{"pictures":[{"picturename":"1000040694_Q_1.jpg","coordinates":{"A":"-9.03,4.35","B":"-11.00,2.00","C":"-4.00,2.00","D":"-9.03,2.00","M":"-7.50,2.00"},"collineations":{"0":"A###D","1":"A###B","2":"A###C","3":"B###D###M###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleRelation:△ABC,EqualityRelation{∠ABD=2*∠ACM},MiddlePointOfSegmentRelation{middlePoint=M,segment=BC},LinePerpRelation{line1=AD, line2=BD, crossPoint=D},ProveConclusionRelation:[Proof: EqualityRelation{DM=(1/2)*AB}]

326, topic: Rt △ABC in the, $ \ angle BAC =90 ^ \ circ $, D is the midpoint of BC, E is the midpoint of

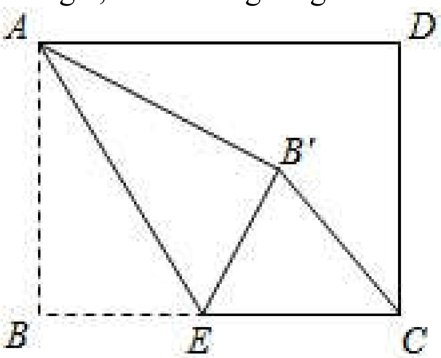
AD, cross-over point A as AF // BC BE extension line in point F . #% # (1) Proof: $ \ vartriangle AEF \ cong \ vartriangle DEB $; #% # (2) proved quadrangular ADCF a diamond; #% # (3) If AC =4, AB =5, the diamond ADCF area. #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000041054_Q_1.jpg","coordinates":{"A":"-6.00,3.73","B":"-9.00,2.00","C":"-5.00,2.00","D":"-7.00,2.00","E":"-6.50,2.87","F":"-4.00,3.73"},"collineations":{"0":"A###B","1":"B###D###C","2":"C###F","3":"F###A","4":"A###E###D","5":"B###E###F","6":"A###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: RightTriangleRelation:RightTriangle:△ABC[Optional.of(A)],EqualityRelation{∠BAC=(1/2*Pi)},MiddlePointOfSegmentRelation{middlePoint=D,segment=BC},MiddlePointOfSegmentRelation{middlePoint=E,segment=AD},PointOnLineRelation{point=A, line=AF, isConstant=false, extension=false},LineParallelRelation [iLine1=AF, iLine2=BC],LineCrossRelation [crossPoint=Optional.of(F), iLine1=AF, iLine2=BE],RhombusRelation{rhombus=Rhombus:ADCF},EqualityRelation{S_ADCF=v_0},EqualityRelation{AC=4},EqualityRelation{AB=5},(ExpressRelation:[key:]v_0),ProveConclusionRelation:[Proof: TriangleCongRelation{triangleA=△AEF, triangleB=△DEB}],ProveConclusionRelation:[Proof: RhombusRelation{rhombus=Rhombus:ADCF}]

327, topic: As shown in the rectangle ABCD, $ AB =3 $, $ BC =4 $, BC is the edge point E that is connected AE, AE along the folding $ $ ∠B the points falling point B B 'at, when $ △CEB' $ is a right triangle, BE seeking long.



graph:
{"stem":{"pictures":[{"picturename":"1000007014_Q_1.jpg","coordinates":{"A":"0.00,3.00","B":"0.00,0.00","C":"4.00,0.00","D":"4.00,3.00","E":"1.50,0.00","B'":"2.40,1.20"},"collineations":{"0":"A###C###B'","1":"D###C","2":"C###D","3":"A###D","4":"B###C###E"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP:
EqualityRelation{BE=v_0},RectangleRelation{rectangle=Rectangle:ABCD},EqualityRelation{AB=3},EqualityRelation{BC=4},PointOnLineRelation{point=E, line=BC, isConstant=false, extension=false},SegmentRelation:AE,PointCoincidenceRelation{point1=B, point2=B'},RightTriangleRelation:RightTriangle:△CEB'[Optional.of(B')],Calculation:(ExpressRelation:[ke

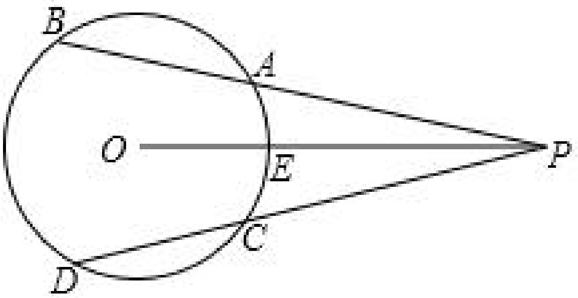
y:]v_0),SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]BE)}

328, topic: FIG, O is $ △ABC $ inner extension line and $ △ABC $ circumcircle BO intersect at points D, connected DC, DA, OA, OC, OADC quadrilateral parallelogram #.? % # (1) Proof: $ △BOC≌ △CDA $; #% # (2) when the $ AB =2 $, seeking $ \ widehat {AB} $ length?.

graph:
{"stem":{"pictures":[{"picturename":"1000026756_Q_1.jpg","coordinates":{"A":"-0.42,3.15","B":"-3.52,-3.12","C":"5.58,-3.52","D":"4.75,1.77","O":"0.14,-0.95"},"collineations":{"0":"B###A","1":"A###O","2":"A###C","3":"A###D","4":"B###O###D","5":"B###C","6":"O###C","7":"C###D"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"A###B###C###D"}]}],"appliedproblems":{}},"substems":[]}

NLP: InscribedShapeOfCircleRelation{closedShape=△ABC, circle=Circle[⊙O_0]{center=O_0, analytic=(x-x_O_0)^2+(y-y_O_0)^2=r_O_0^2}},CoreAndShapeRelation:O/△ABC/InnerCentre,LineCrossCircleRelation{line=BO, circle=⊙O_0, crossPoints=[D], crossPointNum=1},MultiPointCollinearRelation:[D, C],MultiPointCollinearRelation:[D, A],MultiPointCollinearRelation:[O, A],MultiPointCollinearRelation:[O, C],ParallelogramRelation{parallelogram=Parallelogram:ADCO},EqualityRelation{AB=2},Calculation:(ExpressRelation:[key:]⌒AB),ProveConclusionRelation:[Proof: TriangleCongRelation{triangleA=△BOC, triangleB=△CDA}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]⌒AB)}

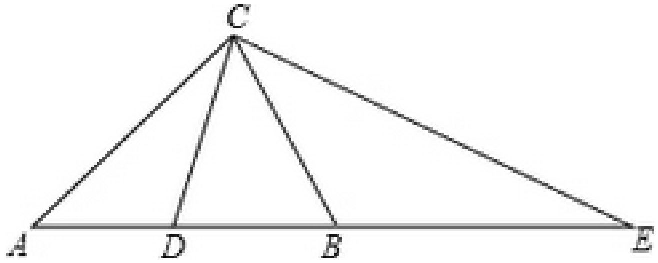
329, topic: as shown, the known point P is a point outside the $ ⊙O $, PB and $ ⊙O $ intersect at points A, B, PD and intersect at $ ⊙O $ C, D, $ AB =. CD $ Proof: #% # (1) PO bisects $ ∠BPD $; #% # (2) $ PA =PC $; #% # (3) $ \ widehat {AE} =\ widehat {CE??? } $



graph:
{"stem":{"pictures":[{"picturename":"1000024892_Q_1.jpg","coordinates":{"A":"-3.38,2.10","B":"-5.48,2.38","C":"-3.36,1.00","D":"-5.46,0.66","O":"-4.52,1.53","P":"0.32,1.61"},"collineations":{"0":"B###A###P","1":"D###C###P","2":"O###P"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: PointOutCircleRelation{point=Pcurve=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, points=[P]},LineCrossCircleRelation{line=PB, circle=⊙O, crossPoints=[A, B], crossPointNum=2},LineCrossCircleRelation{line=PD, circle=⊙O, crossPoints=[C, D], crossPointNum=2},EqualityRelation{AB=CD},ProveConclusionRelation:[Proof: AngleBisectorRelation{line=PO,angle=∠APC, angle1=∠APO, angle2=∠CPO}],ProveConclusionRelation:[Proof: EqualityRelation{AP=CP}],ProveConclusionRelation:[Proof: EqualityRelation{⌒AE=⌒CE}]

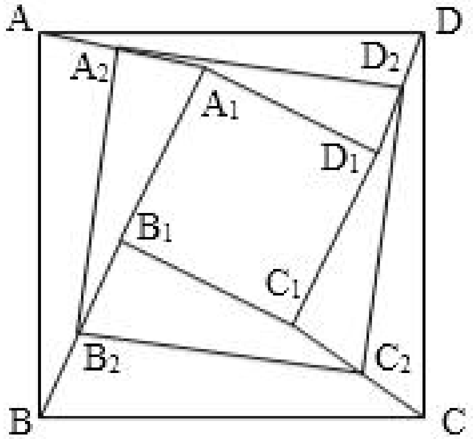
330, topic: CB, CD △AEC are obtuse and an acute angle with the center line of △ABC, AC =AB and Proof: . CE =2CD #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000040366_Q_1.jpg","coordinates":{"A":"-6.91,2.17","B":"-2.91,2.17","C":"-4.33,5.23","D":"-4.19,2.17","E":"1.09,2.17"},"collineations":{"0":"A###C","1":"C###D","2":"C###B","3":"E###C","4":"A###D###E###B"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP:
ObtuseTriangleRelation:ObtuseTriangle:△AEC[Optional.absent()],AcuteTriangleRelation:AcuteTriangle:△ABC,LineRoleRelation{Segment=CD, roleType=CENTRAL_LINE},EqualityRelation{AC=AB},MidianLineOfTriangleRelation{midianLine=CB, triangle=△CAE, top=C, bottom=AE},ProveConclusionRelation:[Proof: EqualityRelation{CE=2*CD}]

331, topic: FIG known quadrangle ABCD, $ {A_1} {B_1} {C_1} {D_1} $ are square, $ {A_2} $, $ {B_2} $, $ {C_2} $, $ { are D_2} $ $ a {A_1} $, $ {B_1 $, $ C {C_1} $, $ D {D_1} $ midpoint B} #% # confirmation: quadrilateral $ {A_2} {B_2} { C_2} {D_2} $ is a square.



graph:
{"stem":{"pictures":[{"picturename":"1000010819_Q_1.jpg","coordinates":{"A":"1.00,7.00","B":"1.00,0.00","C":"8.00,0.00","D":"8.00,7.00","A[1]":"4.00,6.00","B[1]":"3.00,3.00","C[1]":"6.00,2.00","D[1]":"7.00,5.00","A[2]":"2.50,6.50","B[2]":"2.00,1.50","C[2]":"7.00,1.00","D[2]":"7.50,6.00"},"collineations":{"0":"B[2]###A[2]","1":"C[2]###B[2]","2":"D[2]###A[2]","3":"C[2]###D[2]","4":"B[1]###A[1]","5":"C[1]###B[1]","6":"D[1]###A[1]","7":"C[1]###D[1]","8":"B###A","9":"C###B","10":"D###A","11":"C###D","12":"A###A[1]###A[2]","13":"B###B[1]###B[2]","14":"C###C[1]###C[2]","15":"D###D[1]###D[2]"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP:
SquareRelation{square=Square:ABCD},SquareRelation{square=Square:A_1B_1C_1D_1},PointRelation:A_2,PointRelation:B_2,SegmentRelation:CC_1,ProveConclusionRelation:[Proof: SquareRelation{square=Square:A_2B_2C_2D_2}]

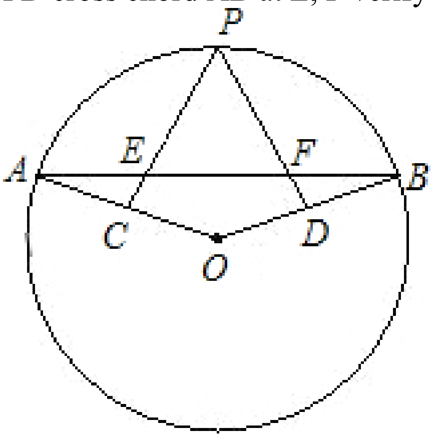
332, topic: As shown in the △ABC, AB =AC, in order to make the diameter of a circle AB is O, each

BC at point D, extension lines cross CA at point E, point D for over $ DH \ bot AC $ at point H, a line segment OA connecting DE cross at point F #% # (1) Prove:. DH is tangent circle O; #% # (2) If a is the midpoint of the EH, seeking $ \ frac {EF} { the value FD} $. #% # <img>

graph:

NLP: TriangleRelation:△ABC,EqualityRelation{AB=AC},DiameterRelation{diameter=AB, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, length=null},LineCrossCircleRelation{line=BC, circle=⊙O, crossPoints=[D], crossPointNum=1},LineCrossCircleRelation{line=CA, circle=⊙O, crossPoints=[E], crossPointNum=1},LinePerpRelation{line1=DH, line2=AC, crossPoint=H},LineCrossRelation [crossPoint=Optional.of(F), iLine1=DE, iLine2=OA],MiddlePointOfSegmentRelation{middlePoint=A,segment=EH},Calculation:(ExpressRelation:[key:]((EF)/(DF))),ProveConclusionRelation:[Proof: LineContactCircleRelation{line=DH, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, contactPoint=Optional.absent(), outpoint=Optional.absent()}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]((EF)/(DF)))}

333, topic: FIG, $ \ widehat {PA} =\ widehat {PB} $, C, D are the radii OA, OB midpoint connected PC, PD cross chord AB at E, F verify two points: #% # (1) PC =PD;. #% # (2) PE =PF #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000080914_Q_1.jpg","coordinates":{"A":"-10.79,0.87","B":"-1.83,1.13","C":"-8.52,-0.29","D":"-4.04,-0.16","O":"-6.24,-1.46","E":"-7.85,0.96","F":"-4.78,1.04","P":"-6.39,3.65"},"collineations":{"0":"O###C###A","1":"O###D###B","2":"A###E###F###B","3":"C###E###P","4":"D###F###P"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"A###P###B"}]}],"appliedproblems":{}},"substems":[]}

NLP: MiddlePointOfSegmentRelation{middlePoint=C,segment=OA},MiddlePointOfSegmentRelation{middlePoint=D,segment=OB},LineCrossRelation [crossPoint=Optional.of(E), iLine1=PC, iLine2=AB],LineCrossRelation [crossPoint=Optional.of(F), iLine1=PD, iLine2=AB],ProveConclusionRelation:[Proof: EqualityRelation{CP=DP}],ProveConclusionRelation:[Proof: EqualityRelation{EP=FP}]

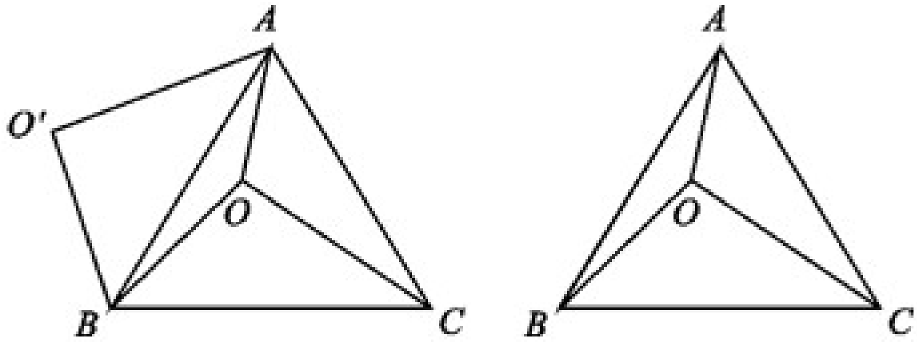
334, topic: FIG, O is an equilateral point △$, $ OA =3 $, $ OB =4 $, $ OC =5 $, line segment BO rotated counterclockwise about the point B to give $ 60 ° $ $ line segment in the ABC $ BO '$.?

(1)求点O与$O′$的距离;?

(2)证明:$∠AOB=150°$;?

(3)求四边形$AOBO’$的面积.?

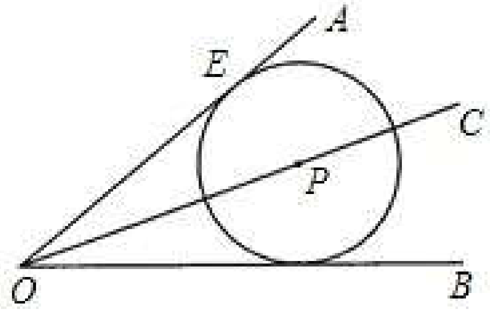
(4) direct write $ △AOC $ and $ △AOB $ area and is _____. <Img>



graph:
{"stem":{"pictures":[{"picturename":"1000027560_Q_1.jpg","coordinates":{"A":"0.91,2.86","B":"-2.65,-3.00","C":"4.00,-3.00","B'":"-3.92,0.79","O":"0.00,0.00"},"collineations":{"0":"B###O","1":"B###B'","2":"A###B'","3":"A###O","4":"C###O","5":"C###B","6":"A###C","7":"A###B"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[{"substemid":"2","questionrelies":"1","pictures":[],"appliedproblems":{}},{"substemid":"3","questionrelies":"2","pictures":[],"appliedproblems":{}},{"substemid":"4","questionrelies":"3","pictures":[],"appliedproblems":{}}]}

NLP: known conditions QuadrilateralRelation {quadrilateral =AOBO '}, EqualityRelation {S_AOBO' =v_0}, RegularTriangleRelation: RegularTriangle: △ABC, PositionOfPoint2RegionRelation {point =O, region =EnclosedRegionRelation {name =ABC, closedShape =△ABC}, position =inner}, EqualityRelation {AO =3}, EqualityRelation {BO =4}, EqualityRelation {CO =5}, RotateRelation {preData =BO, afterData =BO ', rotatePoint =B, rotateDegree =' (1/3 * Pi) ' , rotateDirection =aNTICLOCKWISE}, coordinate PointRelation: O, EqualityRelation {O '=v_1}, evaluation (size) :(ExpressRelation: [key:] v_1), evaluation (size) :(ExpressRelation: [key:] v_0) , SolutionConclusionRelation {relation =coordinates PointRelation: O}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] O ')}, ProveConclusionRelation: [Proof: EqualityRelation {∠AOB =(5/6 * Pi) }], SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] S_AOBO ')}

335, topic: FIG known: OC bisects $ ∠AOB $, P is an arbitrary point on the OC, and OA $ ⊙P $ verify tangent at point E.: OB and $ ⊙P $ tangent.

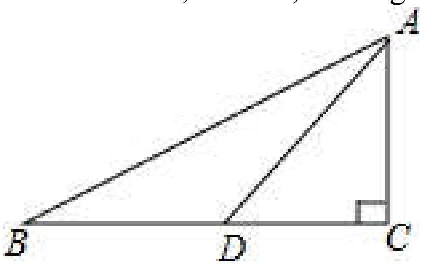


graph:
{"stem":{"pictures":[{"picturename":"1000008245_Q_1.jpg","coordinates":{"A":"7.03,8.81","B":"10.00,0.00","C":"12.69,6.11","P":"5.87,2.83","E":"3.66,4.59","O":"0.00,0.00"},"collineations":{"0":"O###A###E","1":"P###C###O","2":"O###B"},"variable-equals":{},"circles":[{"center":"P","pointincircle":"E"}]}],"appliedproblems":{}},"substems":[]}

NLP: AngleBisectorRelation{line=OC,angle=∠BOE, angle1=∠BOC, angle2=∠

COE},PointOnLineRelation{point=P, line=OC, isConstant=false, extension=false},LineContactCircleRelation{line=OA, circle=Circle[⊙P]{center=P, analytic=(x-x_P)^2+(y-y_P)^2=r_P^2}, contactPoint=Optional.of(E), outpoint=Optional.absent()},ProveConclusionRelation:[Proof: LineContactCircleRelation{line=OB, circle=Circle[⊙P]{center=P, analytic=(x-x_P)^2+(y-y_P)^2=r_P^2}, contactPoint=Optional.absent(), outpoint=Optional.absent()}]

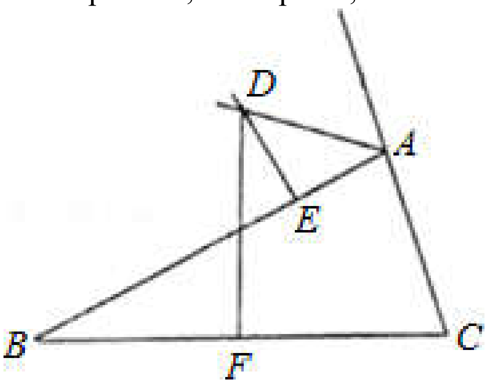
336, topic: As shown in the Rt △ABC, ∠C =90 °, $ \ sin B =\ frac {3} {5} $, point D on the BC, and ∠ADC =45 °, DC =6 , seeking ∠BAD tangent. #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000080828.jpg","coordinates":{"A":"4.00,3.00","B":"0.00,0.00","C":"4.00,0.00","D":"1.00,0.00"},"collineations":{"0":"B###D###C","1":"A###B","2":"A###D","3":"A###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: RightTriangleRelation: RightTriangle: △ABC [Optional.of (C)], EqualityRelation {∠ACD =(1/2 * Pi)}, EqualityRelation {sin (∠ABD) =(3/5)}, PointOnLineRelation {point =D, line =BC, isConstant =false, extension =false}, EqualityRelation {∠ADC =(1/4 * Pi)}, EqualityRelation {CD =6}, find the value of the tangent angle: CalculateTrigonometricOfAngleRelation {angle =∠BAD, trigonometricType =TAN}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] tan (∠BAD))}

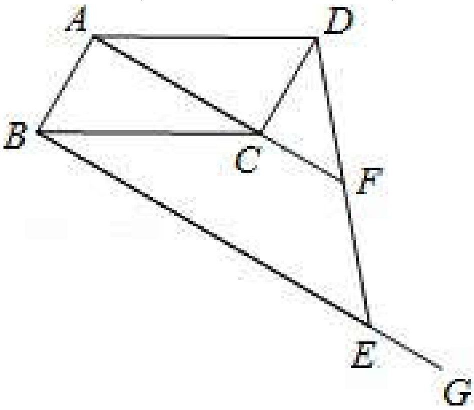
337, topic: FIG, △ABC perpendicular bisector of the side BC DF cross △BAC exterior angle bisector AD at point D, F is a pedal, DE⊥AB at point E, and AB＞AC, Proof: BE- AC =AE. #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000031243_Q_1.jpg","coordinates":{"A":"-5.00,5.00","B":"-9.00,2.00","C":"-4.00,2.00","D":"-6.50,5.49","E":"-5.74,4.45","F":"-6.50,2.00"},"collineations":{"0":"D###F","1":"A###E###B","2":"A###C","3":"B###F###C","4":"D###E","5":"D###A"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleRelation:△BAC,TriangleRelation:△ABC,MiddlePerpendicularRelation [iLine1=DF, iLine2=BC, crossPoint=Optional.of(F)],LineCrossRelation [crossPoint=Optional.of(D), iLine1=DF, iLine2=AD],LinePerpRelation{line1=DE, line2=AB, crossPoint=E},InequalityRelation{AB>AC},AngleBisectorRelation{line=AD,angle=∠CAE, angle1=∠DAE, angle2=∠CAD},ProveConclusionRelation:[Proof: EqualityRelation{BE-AC=AE}]

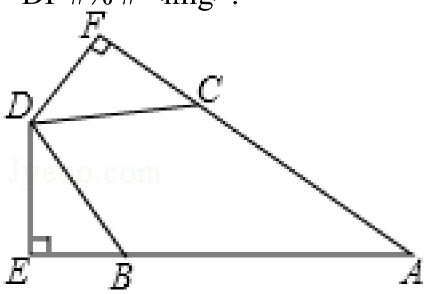
338, topic: as shown in the parallelogram ABCD, through point B as $ BG // AC $, taking the point E on BG, DE connecting extension lines cross at point AC F.?#%#(1) Proof: $ DF =EF $;? #% # (2) If the $ AD =2 $, $ ∠ADC =60 ° $, $ AC⊥DC $ at point C $, AC =2CF $, BE seeking long.



graph:
{"stem":{"pictures":[{"picturename":"1000026586_Q_1.jpg","coordinates":{"A":"-6.50,0.86","B":"-7.00,0.00","C":"-5.00,0.00","D":"-4.50,0.86","E":"-4.00,-1.72","F":"-4.25,-0.43"},"collineations":{"0":"A###B","1":"A###D","2":"B###C","3":"D###C","4":"A###C###F","5":"B###E","6":"D###E###F"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: ParallelogramRelation{parallelogram=Parallelogram:ABCD},LineParallelRelation [iLine1=BG, iLine2=AC],PointOnLineRelation{point=B, line=BG, isConstant=false, extension=false},PointOnLineRelation{point=E, line=BG, isConstant=false, extension=false},LineCrossRelation [crossPoint=Optional.of(F), iLine1=DE, iLine2=AC],EqualityRelation{BE=v_0},EqualityRelation{AD=2},EqualityRelation{∠ADC=(1/3*Pi)},LinePerpRelation{line1=AC, line2=DC, crossPoint=C},EqualityRelation{AC=2*CF},Calculation:(ExpressRelation:[key:]v_0),ProveConclusionRelation:[Proof: EqualityRelation{DF=EF}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]BE)}

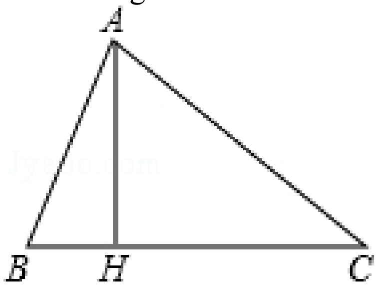
339, topic: FIG, AB =AC, BD =CD, DE⊥AB at point E, DF⊥AC at point F, the test described: DE =DF #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000029142_Q_1.jpg","coordinates":{"A":"10.00,2.00","B":"4.00,2.00","C":"4.71,4.83","D":"2.00,4.00","E":"2.00,2.00","F":"2.94,5.77"},"collineations":{"0":"F###D","1":"E###D","2":"C###D","3":"D###B","4":"F###C###A","5":"E###B###A"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: EqualityRelation{AB=AC},EqualityRelation{BD=CD},LinePerpRelation{line1=DE, line2=AB, crossPoint=E},LinePerpRelation{line1=DF, line2=AC, crossPoint=F},ProveConclusionRelation:[Proof: EqualityRelation{DE=DF}]

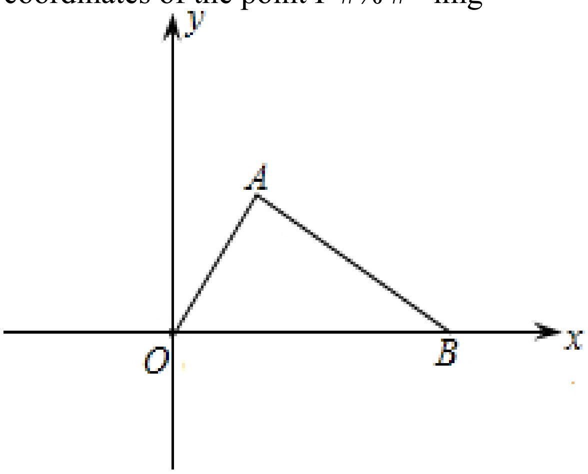
340, topic: FIG known in △ABC, AH⊥BC in H, ∠C =35 °, and AB + BH =HC, find the degree ∠B #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"8F3DB04F266D4E70BD140F338FFAF1CB.jpg","coordinates":{"A":"-12.38,7.46","B":"-14.00,3.00","C":"-6.00,3.00","H":"-12.38,3.00"},"collineations":{"0":"A###B","1":"C###A","2":"A###H","3":"B###H###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[{"substemid":"2","questionrelies":"1","pictures":[],"appliedproblems":{}}]}

NLP: TriangleRelation: △ABC, LinePerpRelation {line1 =AH, line2 =BC, crossPoint =H}, EqualityRelation {∠ACH =(7/36 * Pi)}, EqualityRelation {AB + BH =CH}, the size of the required angle: AngleRelation {angle =∠ABH}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] ∠ABH)}

341, topic: the plane rectangular coordinate system, the point A in the first quadrant, the coordinates of the point B is (3,0), OA =2, ∠AOB =60 ° #% # (1) find the coordinates of the point A. and the length of line AB;. #% # (2) If there is the x-axis point P, such that △PAB isosceles you to write directly the coordinates of the point P #% # <img>

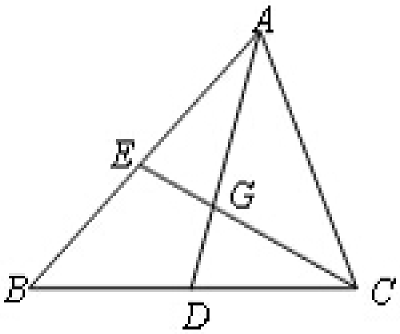


graph:
{"stem":{"pictures":[{"picturename":"1000081496_Q_1.jpg","coordinates":{"A":"1.00,1.73","B":"3.00,0.00","O":"0.00,0.00"},"collineations":{"0":"B###O","1":"A###B","2":"A###O"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: PointInDomRelation [point=A, local=FIRST_QUADRANT],PointRelation:B(3,0),EqualityRelation{AO=2},EqualityRelation{∠AOB=(1/3*Pi)},EqualityRelation{AB=v_0},Coordinate:PointRelation:A,Calculation:(ExpressRelation:[key:]v_0),PointOnLineRelation{point=P, line=StraightLine[X] analytic :y=0 slope:0 b:0

isLinearFunction:false, isConstant=false, extension=false},IsoscelesTriangleRelation:IsoscelesTriangle:△PAB[Optional.absent()],Coordinate:PointRelation:P,SolutionConclusionRelation{relation=Coordinate:PointRelation:A},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]AB)},SolutionConclusionRelation{relation=Coordinate:PointRelation:P}

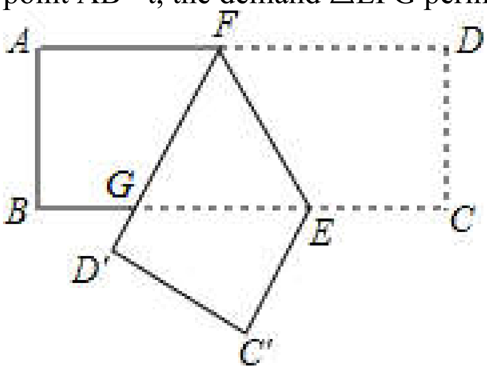
342, topic: FIG, $ \ vartriangle ABC $ in, $ D $, $ E $ is the midpoint of each side $ BC $, $ AB $ a, $ AD $, $ CE $ intersect at $ G $ #%. # Proof: $ \ frac {GE} {GC} =\ frac {GD} {GA} =\ frac {1} {2} $



graph:
{"stem":{"pictures":[{"picturename":"1000010780_Q_1.jpg","coordinates":{"A":"0.00,6.03","B":"-5.00,0.00","C":"2.00,0.00","D":"-1.50,0.00","E":"-2.50,3.02","G":"-1.00,2.01"},"collineations":{"0":"B###A###E","1":"C###G###E","2":"D###A###G","3":"B###C###D","4":"C###A"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP:
TriangleRelation:△ABC,MiddlePointOfSegmentRelation{middlePoint=D,segment=BC},MiddlePointOfSegmentRelation{middlePoint=E,segment=AB},LineCrossRelation [crossPoint=Optional.of(G), iLine1=AD, iLine2=CE],ProveConclusionRelation:[Proof: MultiEqualityRelation [multiExpressCompare=((EG)/(CG))=((DG)/(AG))=(1/2), originExpressRelationList=[], keyWord=null, result=null]]

343, topic: FIG., It is known in the rectangle ABCD, the point E on the side BC, BE =2CE, rectangular folded along a straight line through the point E, the points C, D, respectively, falls below the point C BC ', D' at, and point C ', D', B in the same line, with the side crease AD at point F, D'F and G. BE provided at point AB =t, the demand △EFG perimeter (denoted by the algebraic containing t). #% # <img>

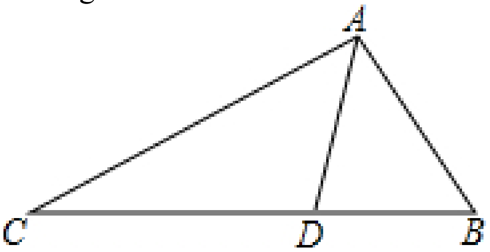


graph:
{"stem":{"pictures":[{"picturename":"1000061934_Q_1.jpg","coordinates":{"A":"0.00,3.00","B":"0.00,0.00","C":"9.00,0.00","D":"9.00,3.00","E":"6.00,0.00","F":"4.27,3.00","G":"2.54,0.00","C'":"4.50,-2.60","D'":"1.90,-1.10"},"collineations":{"0":"A###B","1":"C###D","2":"E###F","3":"E###C'","4":"D'###C'","5":"A###F###D","6":"F###G###D'","7":"B###G###E###C"},"variable-equals":{},"circles":[]}],"appliedproblems":

{}},"substems":[]}

NLP: EqualityRelation{C_△EFG=v_2},(ExpressRelation:[key:]t),RectangleRelation{rectangle=Rectangle:ABCD},PointOnLineRelation{point=E, line=BC, isConstant=false, extension=false},EqualityRelation{BE=2*CE},PointRelation:D',LineCrossRelation[crossPoint=Optional.of(G), iLine1=D'F, iLine2=BE],EqualityRelation{AB=t},Calculation:(ExpressRelation:[key:]v_2),SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]C_△EFG)}

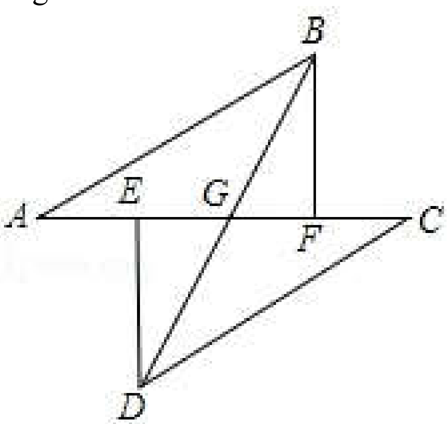
344, topic: As shown in the △ABC, ∠B =2∠C, AD is the bisector ∠CAB Proof: AC =AB + BD #% # <img>.



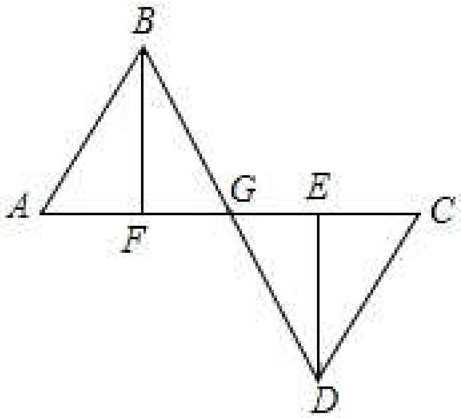
graph: {"stem":{"pictures":[{"picturename":"1000063622_Q_1.jpg","coordinates":{"A":"-1.08,0.00","B":"0.15,-2.14","C":"-4.79,-2.14","D":"-1.66,-2.14"},"collineations":{"0":"A###B","1":"A###C","2":"C###D###B","3":"A###D"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleRelation:△ABC,EqualityRelation{∠ABD=2*∠ACD},AngleBisectorRelation{line=AD,angle=∠BAC, angle1=∠BAD, angle2=∠CAD},ProveConclusionRelation:[Proof: EqualityRelation{AC=AB+BD}]

345, topic: FIG. (1), A, E, F, C in a straight line, AE =CF, through E, F, respectively for DE⊥AC, BF⊥AC #% # (1) If AB =CD. Prove that:.? BD bisects EF #% # (2) if the EC along side AC direction △DEC is moving into a view (2), the remaining conditions remain unchanged, this conclusion holds justify #% # <. img>



图(1)

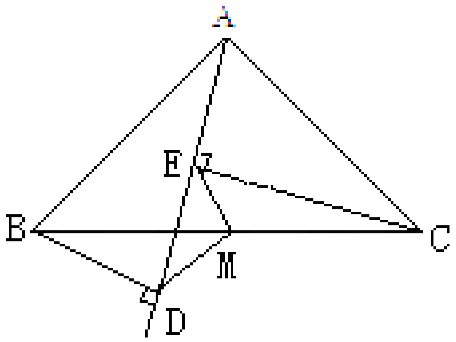


图(2)

graph: {"stem":{"pictures":[],"appliedproblems":{}},"substems":[{"substemid":"1","questionrelies":"","pictures":[{"picturename":"1000031207_Q_1.jpg","coordinates":{"A":"-11.00,3.00","B":"-7.00,5.00","C":"-6.00,3.00","D":"-10.00,1.00","E":"-10.00,3.00","F":"-7.00,3.00","G":"-8.50,3.00"},"collineations":{"0":"B###A","1":"B###G###D","2":"B###F","3":"D###E","4":"C###D","5":"A###E###G###F###C"},"variable-equals":{}," circles":[]}],"appliedproblems":{}},{"substemid":"2","questionrelies":"1","pictures":[{"picturename":"1000031207_Q_2.jpg","coordinates":{"A":"-11.00,-4.00","B":"-10.00,-2.00","C":"-6.00,-4.00","D":"-7.00,-6.00","E":"-7.00,-4.00","F":"-10.00,-4.00","G":"-8.50,-4.00"},"collineations":{"0":"A###B","1":"B###F","2":"B###G###D","3":"D###C","4":"D###E","5":"A###F###G###E###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}}]}

NLP: MultiPointCollinearRelation:[A, E, F, C],EqualityRelation{AE=CF},LinePerpRelation{line1=BF, line2=AC,
crossPoint=F},EqualityRelation{AB=CD},ProveConclusionRelation:[LineDecileSegmentRelation [iLine1=BD, iLine2=EF, crossPoint=Optional.of(G)]]

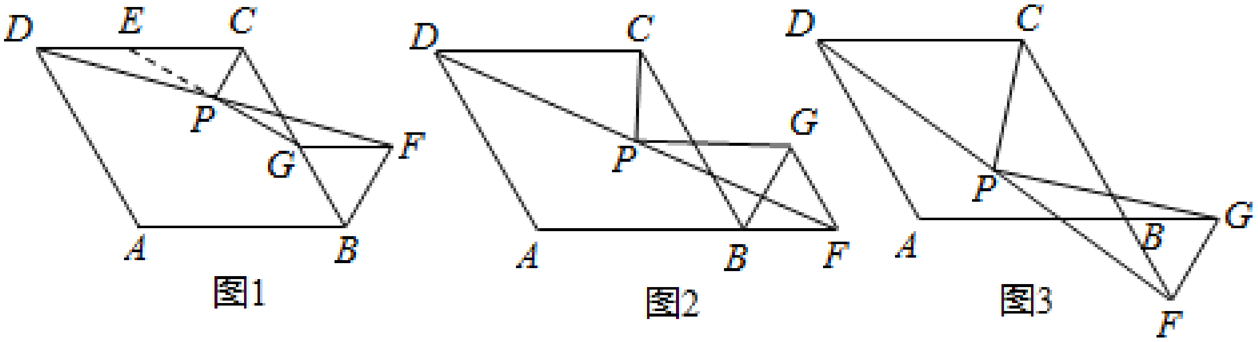
346, topic: FIG known, △ABC medium, CE⊥AD in E, BD⊥AD in D, BM =CM Proof:. ME =MD #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000040695_Q_1.jpg","coordinates":{"A":"-6.35,5.21","B":"-9.00,2.00","C":"-4.00,2.00","D":"-7.26,1.57","E":"-6.97,2.74","M":"-6.50,2.00"},"collineations":{"0":"A###B","1":"A###C","2":"B###M###C","3":"A###E###D","4":"D###B","5":"D###M","6":"M###E","7":"E###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleRelation:△ABC,LinePerpRelation{line1=CE, line2=AD,
crossPoint=E},LinePerpRelation{line1=BD, line2=AD,
crossPoint=D},EqualityRelation{BM=CM},ProveConclusionRelation:[Proof:
EqualityRelation{EM=DM}]

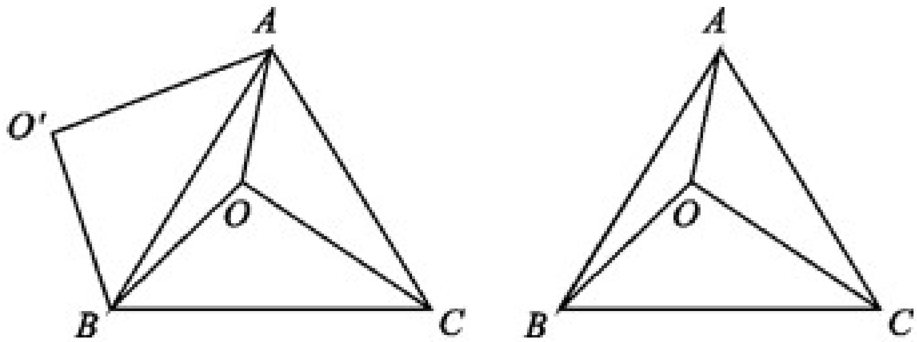
347, topic: BGF in the equilateral triangle and rhombus ABCD, ∠ABC =60 °, DF is the midpoint of the point P, the connection PG, PC #% # (1) in FIG. 1, point G when the edge BC. Prove that:. $ PG =\ sqrt {3} PC $ #% # (2) shown in Figure 2, when the point F at the time of the extension line AB, the line PC, PG what kind of relationship between the number of write your guess? and prove. #% # (3) shown in Figure 3, when the point F at the time of the extension line of the CB, the line PC, PG how about the number of relationship? write your guess. (does not have to prove) #% # <img >



graph:
{"stem":{"pictures":[],"appliedproblems":{}},"substems":[{"pictures":[{"picturename":"1000034589_Q_1.jpg","coordinates":{"A":"-4.26,-0.90","B":"-0.26,-0.90","C":"-2.26,2.56","D":"-6.26,2.56","F":"0.51,0.43","G":"-1.03,0.43","P":"-2.88,1.50"},"collineations":{"0":"A###D","1":"C###D","2":"P###D###F","3":"A###B","4":"B###G###C","5":"B###F","6":"P###F","7":"P###G","8":"P###C","9":"G###F"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},{"pictures":[{"picturename":"1000034589_Q_2.jpg","coordinates":{"A":"-4.26,-0.90","B":"-0.26,-0.90","C":"-2.26,2.56","D":"-6.26,2.56","F":"1.28,-0.90","G":"0.51,0.43","P":"-2.49,0.83"},"collineations":{"0":"A###D","1":"C###D","2":"P###D###F","3":"A###B###F","4":"B###G","5":"G###F","6":"B###C","7":"P###G","8":"P###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},{"pictures":[{"picturename":"1000034589_Q_3.jpg","coordinates":{"A":"-4.26,-0.90","B":"-0.26,-0.90","C":"-2.26,2.56","D":"-6.26,2.56","F":"0.51,-2.23","G":"1.28,-0.90","P":"-2.88,0.17"},"collineations":{"0":"A###D","1":"C###D","2":"P###D###F","3":"A###B###G","4":"B###C###F","5":"G###F","6":"P###G","7":"P###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}}]}

NLP:
RegularTriangleRelation:RegularTriangle:△BGF,RhombusRelation{rhombus=Rhombus:ABCD},EqualityRelation{∠ABG=(1/3*Pi)},MiddlePointOfSegmentRelation{middlePoint=P,segment=DF},SegmentRelation:PG,SegmentRelation:PC,(ExpressRelation:[key:]1),PointOnLineRelation{point=G, line=BC, isConstant=false, extension=false},(ExpressRelation:[key:]2),PointOnLineRelation{point=F, line=AB, isConstant=false, extension=true},Calculation:(ExpressRelation:[key:](CP/GP)),PointOnLineRelation{point=F, line=CB, isConstant=false, extension=true},Calculation:(ExpressRelation:[key:](CP/GP)),ProveConclusionRelation:[Proof: EqualityRelation{GP=(3^(1/2))*CP}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:](CP/GP))},ProveConclusionRelation:[Proof: (ExpressRelation:[key:]3)],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:](CP/GP))}

348, topic: FIG, O is an equilateral point △$, $ OA =3 $, $ OB =4 $, $ OC =5 $, line segment BO rotated counterclockwise about the point B to give $ 60 ° $ $ line segment in the ABC $ BO '$ (1) to find the point O O $.' $ a distance;% # # (2) demonstrated: $ ∠AOB =150 ° $; #% # (3) required quadrilateral $ AOBO '$ area. #% # (4) to write directly $ △AOC $ and $ △AOB $ area and is _____.

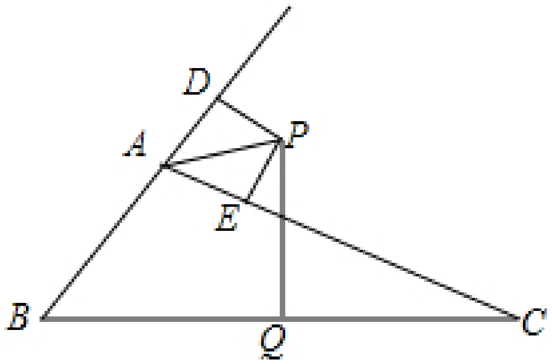


graph:
{"stem":{"pictures":[{"picturename":"1000027560_Q_1.jpg","coordinates":{"A":"0.91,2.86","B":"-2.65,-3.00","C":"4.00,-3.00","B'":"-3.92,0.79","O":"0.00,0.00"},"collineations":{"0":"B###O","1":"B###B'","2":"A###B'","3":"A###O","4":"C###O","5":"C###B","6":"A###C","7":"A###B"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[{"substemid":"2","questionrelies":"1","pictures":[],"appliedproblems":{}},{"substemid":"3","questionrelies":"2","pictures":[],"appliedproblems":{}},{"substemid":"4","questionrelies":"3","pictures":[],"appliedproblems":{}}]}

NLP: RegularTriangleRelation: RegularTriangle: △ABC, PositionOfPoint2RegionRelation {point =O, region =EnclosedRegionRelation {name =ABC, closedShape =△ABC}, position =inner}, EqualityRelation

{AO =3}, EqualityRelation {BO =4}, EqualityRelation { CO =5}, RotateRelation {preData =BO, afterData =BO ', rotatePoint =B, rotateDegree =' (1/3 * Pi) ', rotateDirection =aNTICLOCKWISE}, coordinate PointRelation: O, EqualityRelation {O' =v_1}, evaluation (size) :(ExpressRelation: [key:] v_1), known conditions QuadrilateralRelation {quadrilateral =AOBO '}, EqualityRelation {S_AOBO' =v_0}, evaluation (size) :(ExpressRelation: [key:] v_0) , SolutionConclusionRelation {relation =coordinates PointRelation: O}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] O ')}, ProveConclusionRelation: [Proof: EqualityRelation {∠AOB =(5/6 * Pi) }], SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] S_AOBO ')}

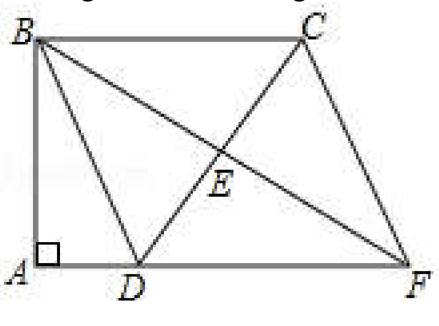
349, topic: FIG, △ABC ∠DAC exterior angle bisector perpendicular bisector BC cross edge at point P, PD⊥AB in D, PE⊥AC in E #% # (1) Prove:. BD =CE ;. #% # (2) If AB =6cm, AC =10cm, long seeking AD #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000031011_Q_1.jpg","coordinates":{"A":"-11.00,4.00","B":"-13.00,2.00","C":"-7.00,2.00","D":"-10.42,4.58","E":"-10.26,3.63","P":"-10.00,4.16","Q":"-10.00,2.00"},"collineations":{"0":"D###A###B","1":"A###E###C","2":"B###Q###C","3":"P###Q","4":"P###D","5":"P###E","6":"A###P"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: LinePerpRelation{line1=PD, line2=AB, crossPoint=D},LinePerpRelation{line1=PE, line2=AC, crossPoint=E},EqualityRelation{AD=v_1},EqualityRelation{AB=6},EqualityRelation{AC=10},Calculation:(ExpressRelation:[key:]v_1),ProveConclusionRelation:[Proof: EqualityRelation{BD=CE}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]AD)}

350, topic: As shown, the quadrangle ABCD, ∠A =∠ABC =90 °, AD =1, BC =3, E is the midpoint of the side CD, and BE is connected with the extension line of AD extension at point F. % # # (1) Proof: BDFC quadrilateral is a parallelogram;% # # (2) If △BCD is an isosceles triangle, quadrilateral BDFC seeking area #% # <img>.

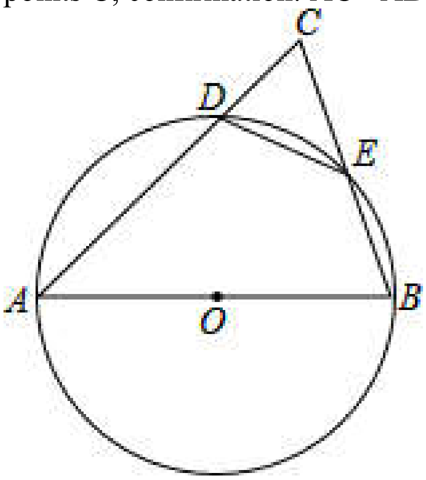


graph:
{"stem":{"pictures":[{"picturename":"A1AEFF80AD0F4B48860835EBD0452987.jpg","coordinates":{"A":

"-14.00,3.00","B":"-14.00,5.80","C":"-11.00,5.80","D":"-13.00,3.00","E":"-12.00,4.40","F":"-10.00,3.00"},"collineations":{"0":"B###A","1":"A###D###F","2":"B###F###E","3":"B###C","4":"B###D","5":"D###E###C","6":"C###F"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[{"substemid":"2","questionrelies":"1","pictures":[],"appliedproblems":{}}]}

NLP: Know:QuadrilateralRelation{quadrilateral=ABCD},MultiEqualityRelation [multiExpressCompare=∠BAD=∠ABC=(1/2*Pi), originExpressRelationList=[], keyWord=null, result=null],EqualityRelation{AD=1},EqualityRelation{BC=3},MiddlePointOfSegmentRelation{middlePoint=E,segment=CD},LineCrossRelation [crossPoint=Optional.of(F), iLine1=BE, iLine2=AD],Know:QuadrilateralRelation{quadrilateral=BCFD},EqualityRelation{S_BCFD=v_0},IsoscelesTriangleRelation:IsoscelesTriangle:△BCD[Optional.of(B)],Calculation:(ExpressRelation:[key:]v_0),ProveConclusionRelation:[Proof: ParallelogramRelation{parallelogram=Parallelogram:BCFD}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]S_BCFD)}

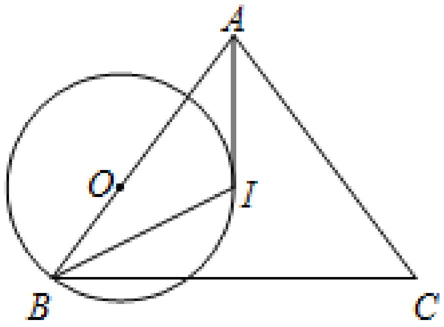
351, topic: FIG, AB is $ \ odot O $ diameter and a chord BE =DE, AD, BE extension lines intersect at points C, confirmation: AC =AB #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000060739_Q_1.jpg","coordinates":{"A":"-4.00,0.00","B":"4.00,0.00","C":"2.32,4.91","D":"0.99,3.88","E":"3.16,2.45","O":"0.00,0.00"},"collineations":{"0":"B###C###E","1":"C###A###D","2":"A###O###B","3":"E###D"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"A###B###E###D"}]}],"appliedproblems":{}},"substems":[]}

NLP: ChordOfCircleRelation{chord=BE, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, chordLength=null,straightLine=null},DiameterRelation{diameter=AB, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, length=null},SegmentRelation:BE,EqualityRelation{BE=DE},LineCrossRelation [crossPoint=Optional.of(C), iLine1=AD, iLine2=BE],ProveConclusionRelation:[Proof: EqualityRelation{AC=AB}]

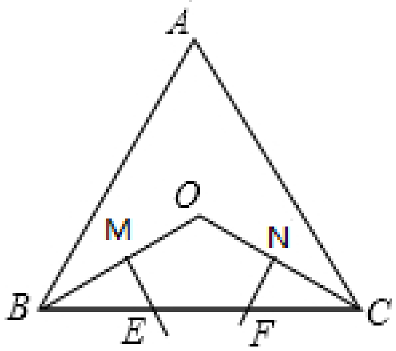
352, topic: As shown in the △ABC, I is the heart, O is an edge point AB, ⊙O through the point B and tangent at the point I and AI% # # (1) Prove:. AB =AC; # % # (2) if BC =16, 5 is the radius ⊙O, AI seeking long. #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000052561_Q_1.jpg","coordinates":{"A":"3.20,6.96","B":"-0.66,1.10","C":"7.33,1.28","O":"0.71,3.18","I":"3.29,3.28"},"collineations":{"0":"A###C","1":"B###C","2":"A###I","3":"B###I","4":"A###O###B"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"B###I"}]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleRelation:△ABC,PointRelation:I,PointOnLineRelation{point=O, line=AB, isConstant=false, extension=false},PointOnCircleRelation{circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, points=[B]},LineContactCircleRelation{line=AI, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, contactPoint=Optional.of(I), outpoint=Optional.of(A)},EqualityRelation{AI=v_0},EqualityRelation{BC=16},RadiusRelation{radius=null, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, length=Express:[5]},Calculation:(ExpressRelation:[key:]v_0),ProveConclusionRelation:[Proof: EqualityRelation{AB=AC}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]AI)}

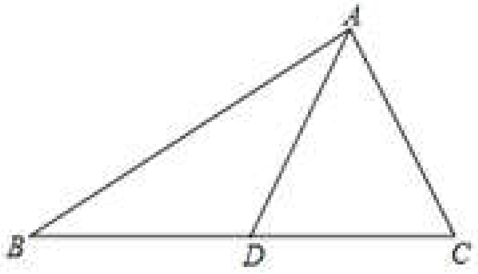
353, topic: FIG, △ABC is an equilateral triangle, ∠ABC, ∠ACB bisectors intersect at point O, BO, CO perpendicular bisector BC at points E, F, respectively pedal M, N, Prove:. BE =EF =FC #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000030979_Q_1.jpg","coordinates":{"A":"-10.00,5.46","B":"-12.00,2.00","C":"-8.00,2.00","M":"-11.00,2.58","N":"-9.00,2.58","E":"-10.67,2.00","F":"-9.33,2.00","O":"-10.00,3.15"},"collineations":{"0":"B###M###O","1":"O###N###C","2":"B###E###F###C","3":"A###B","4":"A###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: AngleBisectorRelation{line=BO,angle=∠ABE, angle1=∠ABO, angle2=∠EBO},AngleBisectorRelation{line=CO,angle=∠ACF, angle1=∠ACO, angle2=∠FCO},RegularTriangleRelation:RegularTriangle:△ABC,LineCrossRelation [crossPoint=Optional.of(E), iLine1=BO, iLine2=BC],ProveConclusionRelation:[Proof: MultiEqualityRelation [multiExpressCompare=BE=EF=CF, originExpressRelationList=[], keyWord=null, result=null]]

354, topic: FIG, △ABC, D is the midpoint of BC Proof: #% # (1) AB + AC＞2AD; #% # (2) If AB =5, AC =3, seeking the AD range. #% # <img>



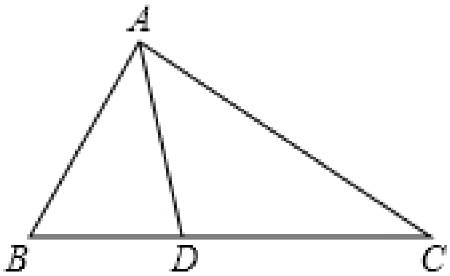
graph:

{"stem":{"pictures":[{"picturename":"A831C413A2FD4ECC9D15C5AA78B28282.jpg","coordinates":{"A":"-9.69,5.49","B":"-14.00,3.00","C":"-8.00,3.00","D":"-11.00,3.00"},"collineations":{"0":"B###A","1":"A###D","2":"C###A","3":"B###D###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[{"substemid":"2","questionrelies":"1","pictures":[],"appliedproblems":{}}]}

NLP:

TriangleRelation:△ABC,MiddlePointOfSegmentRelation{middlePoint=D,segment=BC},EqualityRelation{AC=3},ProveConclusionRelation:[Proof: InequalityRelation{AB+AC>2*AD}],ProveConclusionRelation:[Proof: EqualityRelation{AB=5}]

355, topic: the known △ABC, ∠B =2∠C, ∠BAC bisector BC AD cross edge at point D. Prove:. AC =AB + BD #% # <img>

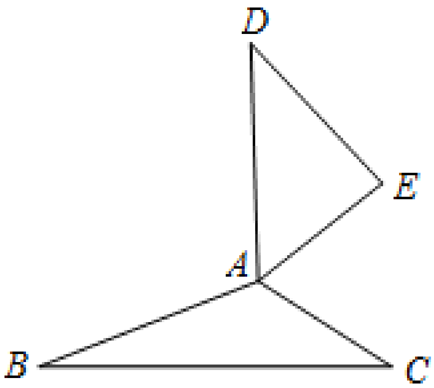


graph:

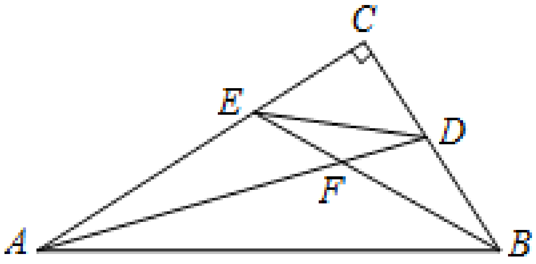
{"stem":{"pictures":[{"picturename":"AAB91CE259F8473CA2B71E934869E8F2.jpg","coordinates":{"A":"-11.05,6.38","B":"-13.00,3.00","C":"-5.19,3.00","D":"-10.14,3.00"},"collineations":{"0":"B###A","1":"A###D","2":"B###C###D","3":"A###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: AngleBisectorRelation{line=AD,angle=∠BAC, angle1=∠BAD, angle2=∠CAD},TriangleRelation:△ABC,EqualityRelation{∠ABD=2*∠ACD},LineCrossRelation[crossPoint=Optional.of(D), iLine1=AD, iLine2=BC],ProveConclusionRelation:[Proof: EqualityRelation{AC=AB+BD}]

356, topic: (1) shown in (1), in the △BAC and △DAE, BA =AD, CA =EA, ∠BAC + ∠DAE =180 ° confirmation: △BAC and equal area #% △DAE. # (2) shown in (2), in the Rt △ABC, ∠ACB =90 °, AD, bE are equally ∠CAB, ∠CBA, and AD, bE at point F. Proof: the area of the quadrilateral ABDE △AFB twice the area. #% # <img>



(1)



(2)

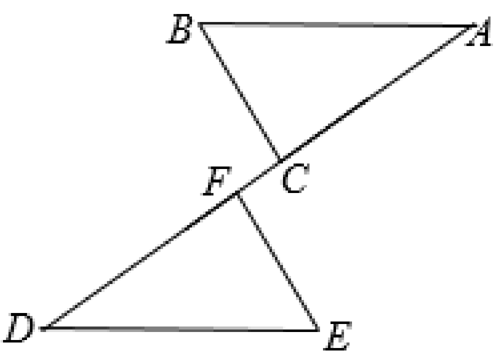
graph:

{"stem":{"pictures":[],"appliedproblems":{}},"substems":[{"substemid":"1","questionrelies":"","pictures":[{"picturename":"1000063728_Q_1.jpg","coordinates":{"A":"6.72,0.00","B":"4.47,-0.98","C":"7.88,-0.98","D":"6.57,2.45","E":"8.04,0.76"},"collineations":{"0":"A###D","1":"A###C","2":"B###C","3":"A###E","4":"A###B","5":"D###E"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},{"substemid":"2","questionrelies":"","pictures":[{"picturename":"1000063728_Q_1.jpg","coordinates":{"A":"1.77,2.78","B":"5.21,2.78","C":"4.09,4.39","D":"4.59,3.66","E":"3.25,3.80","F":"3.92,3.45"},"collineations":{"0":"A###D###F","1":"A###E###C","2":"B###D###C","3":"F###B###E","4":"A###B","5":"D###E"},"variable-equals":{},"circles":[]}],"appliedproblems":{}}]}

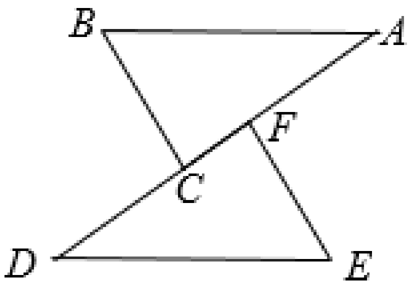
NLP:

EqualityRelation{S_△ABC=v_0},EqualityRelation{S_△ADE=v_1},TriangleRelation:△BAC,TriangleRelation:△DAE,EqualityRelation{AB=AD},EqualityRelation{AC=AE},EqualityRelation{∠BAC+∠DAE=(Pi)},Know:QuadrilateralRelation{quadrilateral=ABDE},EqualityRelation{S_ABDE=v_2},EqualityRelation{S_△ABF=v_3},RightTriangleRelation:RightTriangle:△ABC[Optional.of(A)],EqualityRelation{∠ACB=(1/2*Pi)},AngleBisectorRelation{line=AD,angle=∠BAC, angle1=∠BAD, angle2=∠CAD},AngleBisectorRelation{line=BE,angle=∠ABC, angle1=∠ABE, angle2=∠CBE},LineCrossRelation[crossPoint=Optional.of(F), iLine1=AD, iLine2=BE],ProveConclusionRelation:[Proof: EqualityRelation{v_0=v_1}],ProveConclusionRelation:[Proof: EqualityRelation{v_2=2*v_3}]

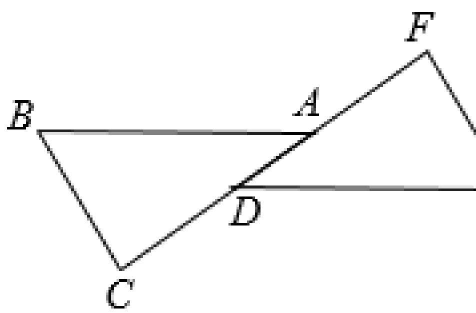
357, topic: FIG ① , point C, F on a straight line AD, and AF =DC, AB =DE, BC =EF #% # (1) again demonstrated AB // DE; #% # (2) viewed in FIG. ② , ③ , noted how they are obtained from the transformed FIG ① ? #% # (3) in the case of known conditions satisfied, according to FIG ② , the test proved BC // EF. #% # <img>



①



②



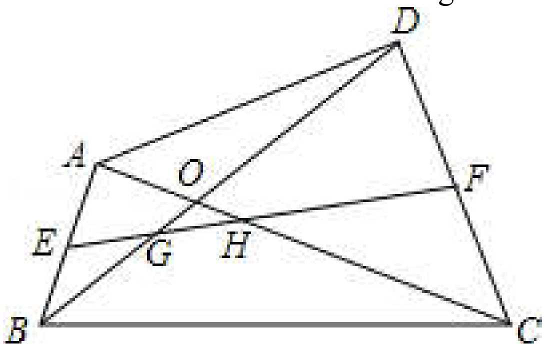
③

graph:

{"stem":{"pictures":[],"appliedproblems":{}},"substems":[{"substemid":"1","questionrelies":"","pictures":[{"picturename":"AC4AD65E96AC4C509ADA0319536CAF53_1.jpg","coordinates":{"A":"-8.00,8.00","B":"-12.00,8.00","C":"-10.44,5.96","D":"-14.00,3.00","E":"-10.00,3.00","F":"-11.56,5.04"},"collineations":{"0":"B###A","1":"A###D###F###C","2":"C###B","3":"E###D","4":"E###F"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},{"substemid":"3","questionrelies":"","pictures":[{"picturename":"AC4AD65E96AC4C509ADA0319536CAF53_2.jpg","coordinates":{"A":"-10.00,5.00","B":"-14.00,5.00","C":"-13.00,2.00","D":"-11.00,4.00","E":"-7.00,4.00","F":"-8.00,7.00"},"collineations":{"0":"B###A","1":"A###D###F###C","2":"C###B","3":"E###D","4":"E###F"},"variable-equals":{},"circles":[]}],"appliedproblems":{}}]}

NLP: PointOnLineRelation{point=C, line=AD, isConstant=false, extension=false},PointOnLineRelation{point=F, line=AD, isConstant=false, extension=false},EqualityRelation{AF=CD},EqualityRelation{AB=DE},EqualityRelation{BC=EF},ProveConclusionRelation:[Proof: LineParallelRelation [iLine1=AB, iLine2=DE]],ProveConclusionRelation:[Proof: LineParallelRelation [iLine1=BC, iLine2=EF]]

358, topic: Given: As shown in the quadrilateral ABCD, the diagonals AC, BD intersect at point O, and AC =BD, E, F, respectively, is the midpoint of AB, CD's, EF respectively cross-BD, AC to point G, H #% # confirmation: OG =OH #% # <img>.

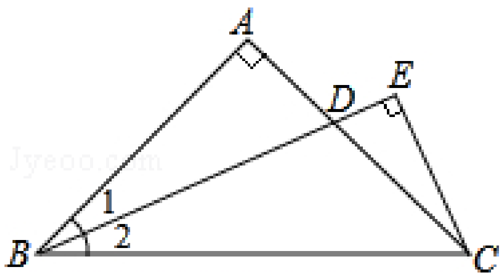


graph:

{"stem":{"pictures":[{"picturename":"1000081738_Q_1.jpg","coordinates":{"A":"-3.46,3.38","B":"-3.82,1.14","C":"-0.13,1.27","D":"-0.65,3.48","E":"-3.64,2.26","F":"-0.39,2.38","G":"-2.23,2.31","H":"-1.80,2.33","O":"-2.02,2.47"},"collineations":{"0":"A###E###B","1":"A###D","2":"A###O###H###C","3":"B###C","4":"C###F###D","5":"B###G###O###D","6":"E###G###H###F"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: Know:QuadrilateralRelation{quadrilateral=ABCD},LineCrossRelation [crossPoint=Optional.of(O), iLine1=AC, iLine2=BD],EqualityRelation{AC=BD},MiddlePointOfSegmentRelation{middlePoint=E,segment=AB},MiddlePointOfSegmentRelation{middlePoint=F,segment=CD},LineCrossRelation [crossPoint=Optional.of(G), iLine1=EF, iLine2=BD],LineCrossRelation [crossPoint=Optional.of(H), iLine1=EF, iLine2=AC],ProveConclusionRelation:[Proof: EqualityRelation{GO=HO}]

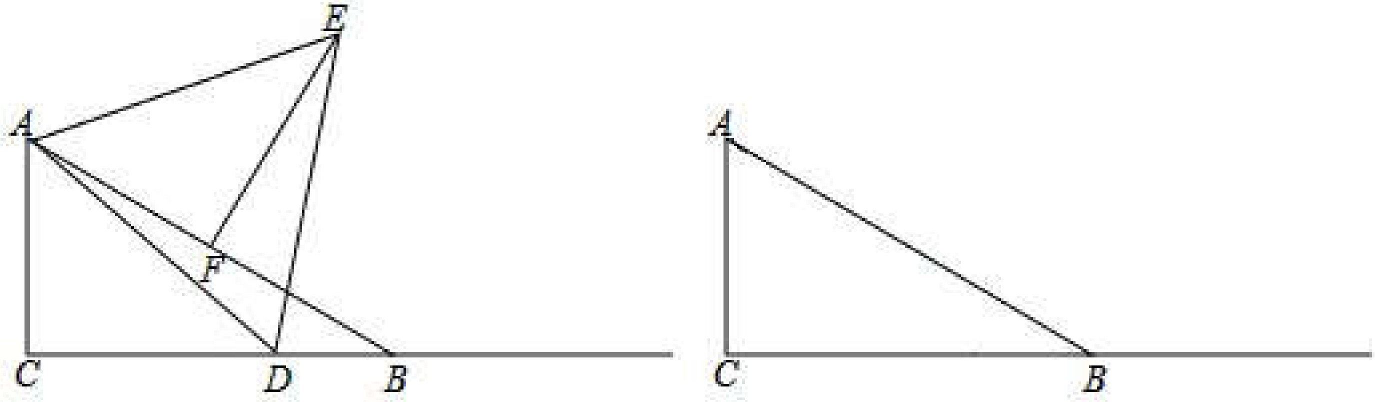
359, topic: As shown in the Rt △ABC, AB =AC, ∠BAC =90 °, ∠1 =∠2, CE⊥BD extended line at point E. Prove:. BD =2CE #% # <img >



graph:
{"stem":{"pictures":[{"picturename":"1000027208_Q_1.jpg","coordinates":{"A":"3.00,3.00","B":"0.00,0.00","C":"6.00,0.00","D":"4.24,1.76","E":"5.12,2.12"},"collineations":{"0":"B###A","1":"B###C","2":"E###C","3":"A###D###C","4":"B###D###E"},"variable-equals":{"0":"∠1=∠ABD","1":"∠2=∠CBD"},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP:
RightTriangleRelation:RightTriangle:△ABC[Optional.of(A)],EqualityRelation{AB=AC},EqualityRelation{∠BAD=(1/2*Pi)},EqualityRelation{∠ABD=∠CBD},ProveConclusionRelation:[Proof: EqualityRelation{BD=2*CE}]

360, topic: in the $ Rt △ABC $, $ ∠C =90 ° $, $ ∠B =30 ° $, $ AB =10 $, point D is a fixed point on the ray CB, $ △ADE $ is equilateral triangle, point F is the midpoint of AB, coupling EF (1) in FIG., a point D when the line segment CB, #% # ① Proof: $ △AEF≌ △ADC $; #% # ② connected bE , line segment $ CD =x $, segment $ BE =y $, seeking $ {{y} ^ {2}} - {{x} ^ {2}} $ #% # value (2) when $ ∠DAB when =15 ° $, $ △ADE $ seeking area.

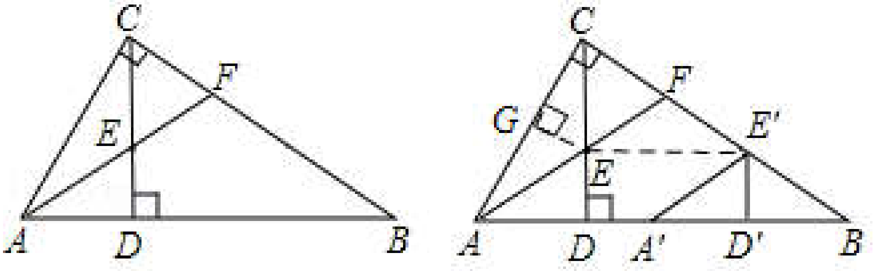


（备用图）

graph:
{"stem":{"pictures":[{"picturename":"1000026737_Q_1.jpg","coordinates":{"A":"0.00,5.00","B":"8.66,0.00","C":"0.00,0.00","D":"5.00,0.00","E":"6.83,6.84","F":"4.33,2.50"},"collineations":{"0":"C###D###B","1":"C###A","2":"A###F###B","3":"E###F","4":"A###E","5":"D###E","6":"A###D"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: RightTriangleRelation:RightTriangle:△ABC[Optional.of(C)],EqualityRelation{∠ACD=(1/2*Pi)},EqualityRelation{∠DBF=(1/6*Pi)},EqualityRelation{AB=10},PointOnLineRelation{point=D, line=CB, isConstant=false, extension=false},RegularTriangleRelation:RegularTriangle:△ADE,MiddlePointOfSegmentRelation{middlePoint=F,segment=AB},PointOnLineRelation{point=D, line=CB, isConstant=false, extension=false},SegmentRelation:BE,EqualityRelation{CD=x},EqualityRelation{BE=y},Calculation:(ExpressRelation:[key:](y^2)-(x^2)),EqualityRelation{S_△ADE=v_0},EqualityRelation{∠DAF=(1/12*Pi)},Calculation:(ExpressRelation:[key:]v_0),ProveConclusionRelation:[Proof: TriangleCongRelation{triangleA=△AEF, triangleB=△ADC}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:](y^2)-(x^2))},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]S_△ADE)}

361, topic: FIG. (1), Rt △ABC in, ∠ACB =90 °, CD⊥AB, pedal is D, AF equally ∠CAB, cross CD at point E, cross-CB at point F #% #. (1) Prove:. CE =CF #% # (2) along the △ADE △A'D'E AB shifted to the right 'position of the point E' falls on the edge BC, other things being equal, such as Figure (2), the hazard a guess:?. BE 'CF and what kind of relationship between the number please justify your conclusion #% # <img>

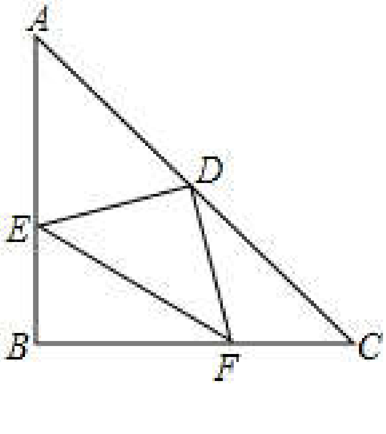


(1) (2)

graph:
{"stem":{"pictures":[{"picturename":"1000050464_Q_1.jpg","coordinates":{"A":"-5.40,-2.06","B":"1.81,-2.06","C":"-3.55,1.08","D":"-3.55,-2.06","E":"-3.55,-1.00","F":"-1.74,0.03"},"collineations":{"0":"A###D###B","1":"F###E###A","2":"C###A","3":"C###D","4":"C###F###B"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[{"substemid":"1","questionrelies":"","pictures":[],"appliedproblems":{}},{"substemid":"2","questionrelies":"","pictures":[{"picturename":"1000050464_Q_1.jpg","coordinates":{"A'":"-1.85,-2.06","D'":"0.01,-2.06","E'":"0.01,-1.00"},"collineations":{"0":"C###F###E'###B","1":"D###A'###D'###A###B","2":"A'###E'","3":"E'###D'"},"variable-equals":{},"circles":[]}],"appliedproblems":{}}]}

NLP: RightTriangleRelation:RightTriangle:△ABC[Optional.of(C)],EqualityRelation{∠ACF=(1/2*Pi)},LinePerpRelation{line1=CD, line2=AB, crossPoint=D},AngleBisectorRelation{line=AF,angle=∠CAD, angle1=∠CAF, angle2=∠DAF},LineCrossRelation [crossPoint=Optional.of(E), iLine1=AF, iLine2=CD],LineCrossRelation [crossPoint=Optional.of(F), iLine1=AF, iLine2=CB],TranslateRelation{preData=△ADE,afterData=△A'D'E',translateInfos='[TranslateInfo{rotateUnit='', translateDirection=null, lineDirection=AB}]},PointOnLineRelation{point=E', line=BC, isConstant=false, extension=false},Calculation:(ExpressRelation:[key:](BE'/CF)),ProveConclusionRelation:[Proof: EqualityRelation{CE=CF}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:](BE'/CF))}

362, topic: As shown, the isosceles triangle ABC, $ ∠ABC =90 ° $, D is the midpoint of the side AC, through the point D as $ DE⊥DF $, cross AB at point E, BC at point F, if $ AE =4 $, $ FC =3 $, EF long seeking. <img>



graph:
{"stem":{"pictures":[{"picturename":"1000006999_Q_1.jpg","coordinates":{"A":"0.00,7.00","B":"0.00,0.00","C":"7.00,0.00","D":"4.00,3.00","E":"0.00,3.00","F":"4.00,0.00"},"collineations":{"0":"E###D","1":"A##

#E###B","2":"E###F","3":"A###C###D","4":"F###B###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP:
EqualityRelation{EF=v_0},IsoscelesTriangleRelation:IsoscelesTriangle:△ABC[Optional.of(B)],EqualityRelation{∠
EBF=(1/2*Pi)},MiddlePointOfSegmentRelation{middlePoint=D,segment=AC},LinePerpRelation{line1=DE, line2=DF, crossPoint=D},LineCrossRelation [crossPoint=Optional.of(E), iLine1=DE, iLine2=AB],LineCrossRelation [crossPoint=Optional.of(F), iLine1=DE, iLine2=BC],EqualityRelation{AE=4},EqualityRelation{CF=3},Calculation:(ExpressRelation:[key:]v_0),SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]EF)}

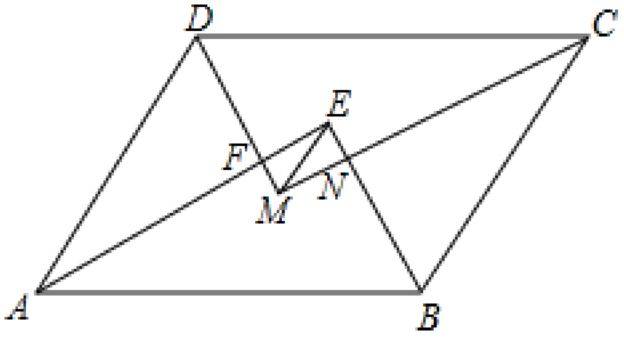
363, topic: Read the following material to fill in the blank to complete the read, then requiring answer: #% # $ \ sin 30 ^ \ circ =\ frac {1} {2} $, $ \ cos 30 ^ \ circ =\ frac {\ sqrt {3}} {2} $ is $ {{\ sin} ^ {2}} {{30} ^ {^ \ circ}} + {{\ cos} ^ {2}} {{30} ^ {^ \ circ}} =$ _____; ① #% # $ \ sin 45 ^ \ circ =\ frac {\ sqrt {2}} {2} $, $ \ cos 45 ^ \ circ =\ frac {\ sqrt { 2} {2} $ is $ {{\ sin} ^ {2}} {{45} ^ {^ \ circ}} + {{\ cos} ^ {2}} {{45} ^ {^ \ circ }} =$ _____; ② #% # $ \ sin 60 ^ \ circ =\ frac {\ sqrt {2}} {2} $, $ \ cos 60 ^ \ circ =\ frac {\ sqrt {2}} { 2} $ is $ {{\ sin} ^ {2}} {{60} ^ {^ \ circ}} + {{\ cos} ^ {2}} {{60} ^ {^ \ circ}} =$. _____ ③ #% # ...... #% # observed above equation, conjecture: for any acute angle A, has $ {{\ sin} ^ {2}} A + {{\ cos} ^ {2}} A =$ _____. ④ (1) in FIG., in the ABC $ $ acute triangle, the definition of trigonometric functions and the Pythagorean theorem

For $ \ angle A $ prove your guess;% # # (2) is known: $ \ angle A $ acute angle $ \ left (\ cos A＞0 \ right) $ and $ \ sin A =\ frac {3 {5}} $, seeking $ \ cos A $.

graph:
{"stem":{"pictures":[{"picturename":"1000010426_Q_1.jpg","coordinates":{"A":"3.00,4.00","B":"3.00,-4.00","C":"-3.00,4.00","D":"3.00,0.00","E":"5.00,0.00","F":"-5.00,0.00","P":"8.33,0.00","O":"0.00,0.00"},"collineations":{"0":"B###F","1":"P###A","2":"F###B","3":"C###A","4":"P###B","5":"D###O###P###E###F","6":"A###D###B","7":"O###C###B"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"A###B###C###E###F"}]}],"appliedproblems":{}},"substems":[{"substemid":"1","questionrelies":"2","pictures":[],"appliedproblems":{}},{"substemid":"2","questionrelies":"1","pictures":[],"appliedproblems":{}},{"substemid":"3","questionrelies":"2","pictures":[],"appliedproblems":{}}]}

NLP: EqualityRelation {(sin ^ 2) * A + (cos ^ 2) * A =_}, KnowledgePointWordRelation {knowledgeWord =KNOWLEDGE_WORD {knowledgeDesc ='Pythagoras', knowledgeId ='330303'}}, AcuteTriangleRelation: AcuteTriangle: △ABC , InequalityRelation {cos (∠CAD)＞0}, known conditions AcuteAngleRelation: ∠BAC / ACUTE_ANGLE, EqualityRelation {sin (∠CAD) =(3/5)}, evaluation (size) :(ExpressRelation: [key:] cos (∠CAD)), SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] cos (∠CAD))}

364, topic: As shown in the □ABCD, $ AB＞AD $, AE, BE, CM, DM, respectively ∠DAB, ∠ABC, ∠BCD, ∠CDA bisector, AE and DM intersect at point F., bE meet at the CM N, connection EM #% # (1) Proof: EFMN quadrilateral is a rectangle;% # # (2) if □ABCD perimeter of 42cm, FM =3cm, EF =4cm, find the AB length. #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"BD50FEABFD894828A3D377632D8749F8.jpg","coordinates":{"A":"-14.00,6.00","B":"-7.50,3.00","C":"-5.45,6.44","D":"-11.95,6.44","E":"-9.09,5.79","F":"-10.98,4.72","M":"-10.37,3.64","N":"-8.48,4.72"},"collineations":{"0":"B###A","1":"F###E###A","2":"D###A","3":"B###C","4":"B###E###N","5":"C###D","6":"C###M###N","7":"D###M###F","8":"M###E"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[{"substemid":"2","questionrelies":"1","pictures":[],"appliedproblems":{}}]}

NLP: AngleBisectorRelation{line=DM,angle=∠ADC, angle1=∠ADM, angle2=∠CDM},ParallelogramRelation{parallelogram=Parallelogram:ABCD},InequalityRelation{AB>AD},SegmentRelation:AE,SegmentRelation:BE,AngleRelation{angle=∠ABC},AngleRelation{angle=∠BCD},MultiLineCrossRelation{lines=[M_0N_0, DM, AE], crossPoint=Optional.of(F)},LineCrossRelation [crossPoint=Optional.of(N), iLine1=BE, iLine2=CM],SegmentRelation:EM,EqualityRelation{AB=v_1},ParallelogramRelation{parallelogram=Parallelogram:ABCD},EqualityRelation{C_ABCD=42},EqualityRelation{FM=3},EqualityRelation{EF=4},Calculation:(ExpressRelation:[key:]v_1),ProveConclusionRelation:[Proof: RectangleRelation{rectangle=Rectangle:EFMN}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]AB)}

365, topic: in the △ABC, AB ≠ AC, D, E in BC, and DE =EC, through the cross point D as DF // BA AE at point F, DF =AC, Proof: AE bisects ∠BAC # % # <img>

graph:
{"stem":{"pictures":[{"picturename":"1000029498_Q_1.jpg","coordinates":{"A":"-1.64,2.01","B":"-4.15,0.32","C":"-0.77,0.29","D":"-3.40,0.31","E":"-2.08,0.30","F":"-1.80,1.39"},"collineations":{"0":"A###B","1":"B###D###E###C","2":"C###A","3":"A###F###E","4":"D###F"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleRelation:△ABC,InequalityRelation{AB≠AC},PointOnLineRelation{point=D, line=BC, isConstant=false, extension=false},PointOnLineRelation{point=E, line=BC, isConstant=false, extension=false},EqualityRelation{DE=CE},PointOnLineRelation{point=D, line=DF, isConstant=false, extension=false},LineParallelRelation [iLine1=DF, iLine2=BA],LineCrossRelation [crossPoint=Optional.of(F), iLine1=DF, iLine2=AE],EqualityRelation{DF=AC},ProveConclusionRelation:[Proof: AngleBisectorRelation{line=AE,angle=∠BAC, angle1=∠BAE, angle2=∠CAE}]

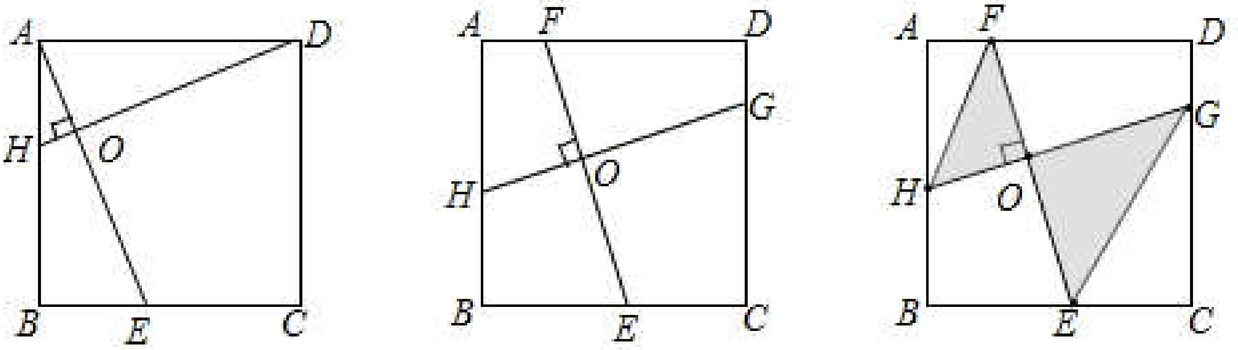
366, topic: Known: points M, N, respectively, it is the midpoint of a line segment AC, BC% of # # (1) in FIG, point C on line segment AB, and AC =9cm, CB =6cm, seeking segment MN. length; #% # (2) If the point C to the line segment AB at any point, and AC =acm, CB =bcm, containing a, b algebraic expression represents a line segment MN length #% # (3) If the point C the line segment. extension line AB, and AC =acm, CB =bcm, you draw graphics, and containing a, b algebraic expression represents the length of the line segment MN. #% # <img>

graph:
{"stem":{"pictures":[],"appliedproblems":{}},"substems":[{"substemid":"1","questionrelies":"","pictures":[{"picturename":"1000072554_Q_1.jpg","coordinates":{"A":"0.00,0.00","B":"15.00,0.00","C":"9.00,0.00","M":"4.50,0.00","N":"12.00,0.00"},"collineations":{"0":"A###M###C###N###B"},"variable-equals":{},"cir

cles":[]}],"appliedproblems":{}}]}

NLP:
MiddlePointOfSegmentRelation{middlePoint=M,segment=AC},MiddlePointOfSegmentRelation{middlePoint=N,segment=BC},EqualityRelation{MN=v_0},PointOnLineRelation{point=C, line=AB, isConstant=false, extension=false},EqualityRelation{AC=9},EqualityRelation{BC=6},Calculation:(ExpressRelation:[key:]v_0),EqualityRelation{MN=v_1},PointOnLineRelation{point=C, line=AB, isConstant=false, extension=false},EqualityRelation{AC=a*c*m},EqualityRelation{BC=b*c*m},EqualityRelation{MN=v_2},PointOnLineRelation{point=C, line=AB, isConstant=false, extension=false},EqualityRelation{AC=a*c*m},EqualityRelation{BC=b*c*m},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]MN)},ProveConclusionRelation:[ExpressAndExpressSetRelation{y=Express:[v_1], vars=[Express:[a], Express:[b]], originFunctionType=null}],ProveConclusionRelation:[ExpressAndExpressSetRelation{y=Express:[v_2], vars=[Express:[a], Express:[b]], originFunctionType=null}]

367, topic: problem:% # # (1) in FIG ① , in the square ABCD, the points E, H, respectively, in the BC, AB, if AE⊥DH at point O, confirmation: AE =DH; #% # Research analogy: #% # (2) in FIG ② , in the square ABCD, point H, E, G, F, respectively, in the AB, BC, CD, DA, segment EF inquiry if EF⊥HG at point O, the HG the relationship between the number and the reasons; #% # integrated use: #% # (3) in (2) are satisfied, HF // GE, as shown in FIG ③ , known BE =EC =2, EO =2FO, seeking the shaded area in FIG. #% # <img>

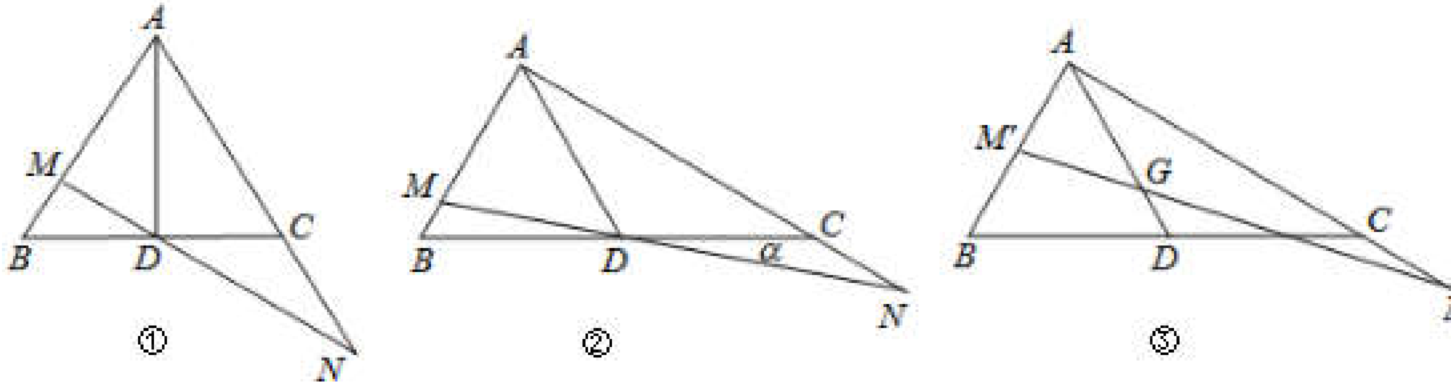


① ② ③

graph:
{"stem":{"pictures":[],"appliedproblems":{}},"substems":[{"substemid":"1","questionrelies":"","pictures":[{"picturename":"1000050486_Q_1.jpg","coordinates":{"A":"-9.00,6.00","B":"-9.00,3.00","C":"-6.00,3.00","D":"-6.00,6.00","E":"-8.00,3.00","H":"-9.00,5.00","O":"-8.70,5.10"},"collineations":{"0":"A###H###B","1":"D###C","2":"B###E###C","3":"A###O###E","4":"H###O###D","5":"A###D"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},{"substemid":"2","questionrelies":"","pictures":[{"picturename":"1000050486_Q_2.jpg","coordinates":{"A":"-9.00,2.00","B":"-9.00,-1.00","C":"-6.00,-1.00","D":"-6.00,2.00","E":"-7.00,-1.00","F":"-8.00,2.00","G":"-6.00,1.00","H":"-9.00,0.00","O":"-7.50,0.50"},"collineations":{"0":"A###H###B","1":"D###G###C","2":"B###E###C","3":"F###O###E","4":"H###O###G","5":"A###F###D"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},{"substemid":"3","questionrelies":"","pictures":[{"picturename":"1000050486_Q_3.jpg","coordinates":{"A":"-9.00,-2.00","B":"-9.00,-5.00","C":"-6.00,-5.00","D":"-6.00,-2.00","E":"-7.50,-5.00","F":"-8.00,-2.00","G":"-6.00,-2.67","H":"-9.00,-3.18","O":"-7.84,-2.99"},"collineations":{"0":"A###H###B","1":"D###G###C","2":"B###E###C","3":"F###O###E","4":"H###O###G","5":"A###F###D","6":"E###G","7":"H###F"},"variable-equals":{},"circles":[]}],"appliedproblems":{}}]}

NLP: SquareRelation{square=Square:ABCD},PointOnLineRelation{point=E, line=BC, isConstant=false, extension=false},PointOnLineRelation{point=H, line=AB, isConstant=false, extension=false},LinePerpRelation{line1=AE, line2=DH, crossPoint=O},SquareRelation{square=Square:ABCD},PointOnLineRelation{point=H, line=AB, isConstant=false, extension=false},PointOnLineRelation{point=E, line=BC, isConstant=false, extension=false},PointOnLineRelation{point=G, line=CD, isConstant=false, extension=false},PointOnLineRelation{point=F, line=DA, isConstant=false, extension=false},LinePerpRelation{line1=EF, line2=HG, crossPoint=O},Calculation:(ExpressRelation:[key:](EF/GH)),SubStemReliedRelation{selfDivideId=-1, reliedDivideId=2},LineParallelRelation [iLine1=HF, iLine2=GE],MultiEqualityRelation [multiExpressCompare=BE=CE=2, originExpressRelationList=[], keyWord=null, result=null],EqualityRelation{EO=2*FO},ProveConclusionRelation:[Proof: EqualityRelation{AE=DH}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:](EF/GH))}

368, topic: As shown, the AD is a center line of △ABC, BC side where the straight line is rotated clockwise about a point $ D $ angle [alpha], alternating the side AB at point M, at point AC cross-ray N, set AM =xAB, AN . =yAC (x, y ≠ 0) #% # (1) in FIG ① , when △ABC is an equilateral triangle and $ α =30 ° $, proved △AMN∽ △DMA; #% # (2) as FIG ② , demonstrate: $ \ frac {1} {x} + \ frac {1} {y} =2 $; #% # (3) in FIG ③ , when G is an arbitrary point on the AD (point G does not a coincident), the linear cross-over point of the side AB in G M ', in the point cross-ray AC N', provided AG =nAD, AM '=x'AB, AN' =y'AC (x ', y' ≠ 0), guess: $ \ frac {1} {x '} + \ frac {1} {y'} =\ frac {2} {n} $ is established and the reasons #% # <img>?.



graph:
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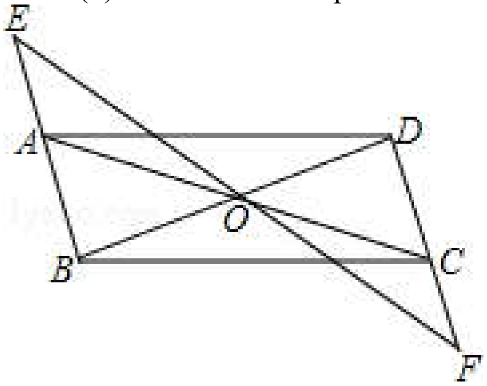
NLP: TriangleRelation:△ABC,LineCrossRelation [crossPoint=Optional.of(M), iLine1=BC, iLine2=AB],LineCrossRelation [crossPoint=Optional.of(N), iLine1=BC, iLine2=AC],EqualityRelation{AM=x*AB},EqualityRelation{AN=y*AC, Condition: [[y≠0]]},MidianLineOfTriangleRelation{midianLine=AD, triangle=△ABC, top=A, bottom=BC},RegularTriangleRelation:RegularTriangle:△ABC,EqualityRelation{α=(1/6*Pi)},PointCoincidenceRelation{point1=G, point2=A},PointOnLineRelation{point=G, line=StraightLine[l_0] analytic :y=k_l_0*x+b_l_0 slope:null b:null isLinearFunction:false, isConstant=false, extension=false},LineCrossRelation [crossPoint=Optional.of(M'), iLine1=StraightLine[l_0] analytic :y=k_l_0*x+b_l_0 slope:null b:null isLinearFunction:false, iLine2=AB],LineCrossRelation [crossPoint=Optional.of(N'), iLine1=StraightLine[l_0] analytic :y=k_l_0*x+b_l_0 slope:null b:null

isLinearFunction:false, iLine2=AC],EqualityRelation{AG=n*AD},EqualityRelation{AM'=x'AB},EqualityRelation{AN'=y'AC, Condition: [[y'≠0]]},ProveConclusionRelation:[Proof: TriangleSimilarRelation{triangleA=△AMN, triangleB=△DMA}],ProveConclusionRelation:[Proof: EqualityRelation{(1/x)+(1/y)=2}],ProveConclusionRelation:[Proof: EqualityRelation{(1/(x'))+(1/(y'))=(2/n)}]

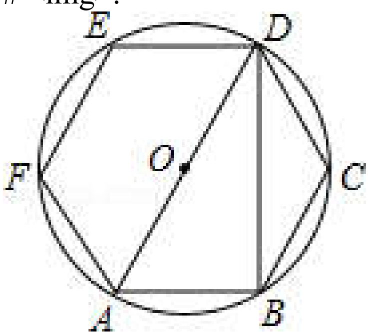
369, topic: FIG parallelogram ABCD, the point O is the intersection of AC and BD, and a straight line through the point O BA, DC are extension lines intersect at points E, F #% # (1) Prove:. △AOE≌ △COF; #% # (2) Proof: AECF quadrilateral is a parallelogram #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000031896_Q_1.jpg","coordinates":{"A":"-9.67,4.00","B":"-9.00,2.00","C":"-5.00,2.00","D":"-5.67,4.00","E":"-10.00,5.00","F":"-4.67,1.00","O":"-7.33,3.00"},"collineations":{"0":"E###A###B","1":"B###C","2":"D###C###F","3":"A###D","4":"A###O###C","5":"B###O###D","6":"E###O###F"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: ParallelogramRelation{parallelogram=Parallelogram:ABCD},LineCrossRelation [crossPoint=Optional.of(O), iLine1=AC, iLine2=BD],LineCrossRelation [crossPoint=Optional.of(F), iLine1=DC, iLine2=FE],LineCrossRelation [crossPoint=Optional.of(E), iLine1=BA, iLine2=FE],PointOnLineRelation{point=O, line=FE, isConstant=false, extension=false},ProveConclusionRelation:[Proof: TriangleCongRelation{triangleA=△AOE, triangleB=△COF}],ProveConclusionRelation:[Proof: ParallelogramRelation{parallelogram=Parallelogram:AECF}]

370, topic: As shown, the regular hexagon ABCDEF connected to ⊙O, seeking the degree ∠ADB #% # <img>.

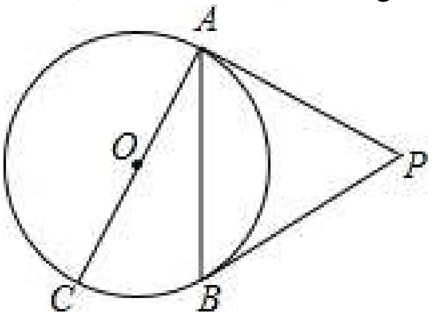


graph:
{"stem":{"pictures":[{"picturename":"1000083408_Q_1.jpg","coordinates":{"A":"-1.03,-1.83","B":"1.07,-1.81","C":"2.10,0.02","D":"1.03,1.83","E":"-1.07,1.81","F":"-2.10,-0.02","O":"0.00,0.00"},"collineations":{"0":"A###B","1":"B###C","2":"C###D","3":"D###E","4":"E###F","5":"A###F","6":"A###O###D","7":"D##

#B"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"A###B###C###D###E###F"}]}],"appliedproblems":{}},"substems":[]}

NLP: ANGULAR size: AngleRelation {angle =∠BDO}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] ∠BDO)}

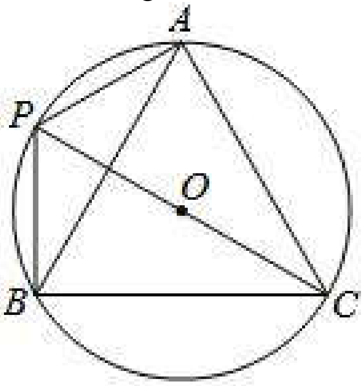
371, topic: FIG, PA, PB are two tangents, $ ⊙O $ tangent point were point A, B, if the diameter $ AC =12 $, $ ∠P =60 ° $, seeking chord length AB . <img>



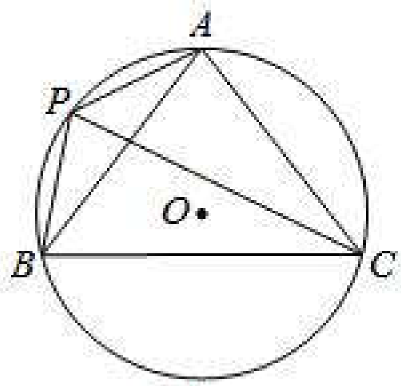
graph:
{"stem":{"pictures":[{"picturename":"C9EA8987467F4BB386C0EF25979A6AAE.jpg","coordinates":{"A":"-8.50,9.60","B":"-8.50,4.40","C":"-11.50,4.40","O":"-10.00,7.00","P":"-4.00,7.00"},"collineations":{"0":"B###A","1":"C###O###A","2":"A###P","3":"P###B"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"C###A###B"}]}],"appliedproblems":{}},"substems":[]}

NLP: LineContactCircleRelation{line=PA, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, contactPoint=Optional.of(A), outpoint=Optional.of(P)},LineContactCircleRelation{line=PB, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, contactPoint=Optional.of(B), outpoint=Optional.of(P)},DiameterRelation{diameter=AC, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, length=Express:[AC=12]},EqualityRelation{∠APB=(1/3*Pi)},Calculation:(ExpressRelation:[key:]AB),ChordOfCircleRelation{chord=AB, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, chordLength=null,straightLine=null},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]AB)}

372, topic: FIG, $ △ABC $ a $ \ within the inscribed triangle odot O $, $ AB =AC $, point P is a $ \ widehat {AB} $ midpoint connection PA, PB, PC.? % # # (1) in FIG ① , if $ ∠BPC =60 ° $, Proof: ? $ AC =\ sqrt {3} AP $; #% # (2) in FIG ② , if $ \ sin \ angle BPC =\ frac {24} {25} $, seeking $ \ Tan \ value of angle PAB $.



图①



图②

graph:
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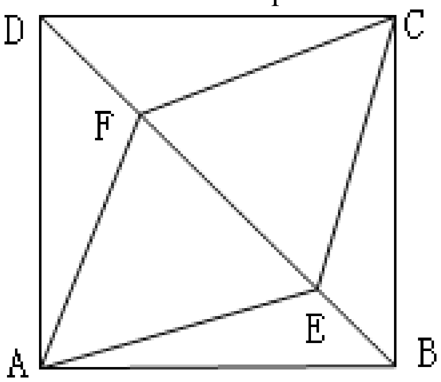
NLP: InscribedShapeOfCircleRelation{closedShape=△ABC, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}},EqualityRelation{AB=AC},MiddlePointOfArcRelation:P/type:MAJOR_ARC⌒AB,SegmentRelation:PA,SegmentRelation:PB,SegmentRelation:PC,EqualityRelation{∠BPO=(1/3*Pi)},EqualityRelation{sin(∠BPO)=(24/25)},Calculation:(ExpressRelation:[key:]tan(∠BAP)),ProveConclusionRelation:[Proof: EqualityRelation{AC=(3^(1/2))*AP}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]tan(∠BAP))}

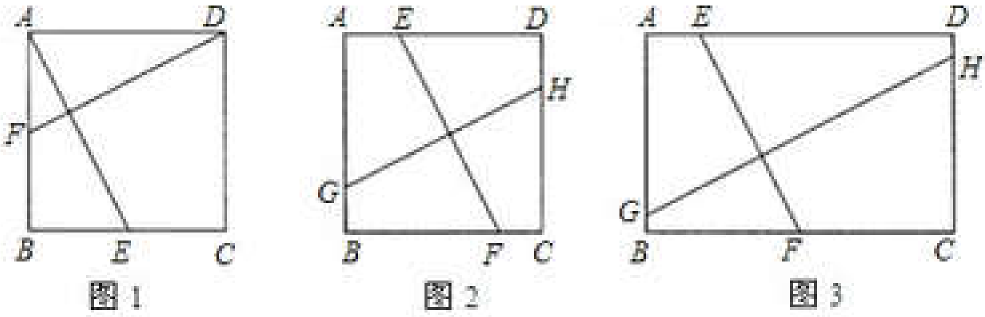
373, topic: Given: FIG, E, F are two points on a diagonal line BD square ABCD, and BE =DF confirmation: AECF quadrilateral is a rhombus #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000050594_Q_1.jpg","coordinates":{"A":"-7.00,3.00","B":"-3.00,3.00","C":"-3.00,7.00","D":"-7.00,7.00","E":"-4.00,4.00","F":"-6.00,6.00"},"collineations":{"0":"D###F###E###B","1":"C###D","2":"B###C","3":"A###D","4":"A###E","5":"A###B","6":"A###F","7":"C###E","8":"C###F"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: SquareRelation{square=Square:ABCD},PointOnLineRelation{point=E, line=BD, isConstant=false, extension=false},PointOnLineRelation{point=F, line=BD, isConstant=false, extension=false},EqualityRelation{BE=DF},ProveConclusionRelation:[Proof: RhombusRelation{rhombus=Rhombus:AECF}]

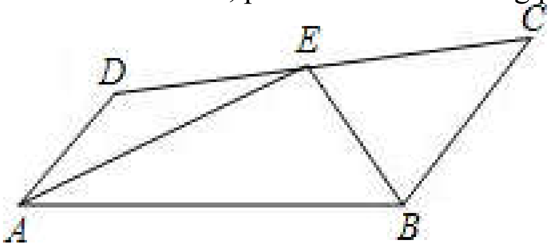
374, topic: Mary participated in mathematics interest groups, provides the following three linked questions, please help solve: #% # (1) shown in Figure 1, the square ABCD, for AE BC at E, DF⊥ AE AB in cross-F., Proof: AE =DF; #% # (2) in FIG. 2, a square ABCD, the points E, F, respectively, in the AD, BC, point G, H, respectively on AB, the CD, and EF ⊥GH, seeking $ \ frac {EF} {GH} $ value; #% # (3) in FIG. 3, the rectangle ABCD, AB =a, BC =b, points E, F in the AD, the BC respectively, and EF⊥GH, seeking $ \ frac {EF} {GH} $ value. #% # <img>



graph:
{"stem":{"pictures":[],"appliedproblems":{}},"substems":[{"substemid":"1","questionrelies":"","pictures":[{"picturename":"1000041810_Q_1.jpg","coordinates":{"A":"-7.00,6.00","B":"-7.00,3.00","C":"-4.00,3.00","D":"-4.00,6.00","E":"-5.60,3.00","F":"-7.00,4.58"},"collineations":{"0":"A###F###B","1":"B###E###C","2":"A###D","3":"D###F","4":"A###E","5":"D###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},{"substemid":"2","questionrelies":"","pictures":[{"picturename":"1000041810_Q_2.jpg","coordinates":{"A":"-7.00,1.00","B":"-7.00,-2.00","C":"-4.00,-2.00","D":"-4.00,1.00","E":"-6.00,1.00","F":"-5.00,-2.00","H":"-4.00,0.00","G":"-7.00,-1.00"},"collineations":{"0":"A###E###D","1":"D###H###C","2":"B###F###C","3":"A###G###B","4":"E###F","5":"G###H"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},{"substemid":"3","questionrelies":"","pictures":[{"picturename":"1000041810_Q_3.jpg","coordinates":{"A":"-7.00,-5.00","B":"-7.00,-8.00","C":"-3.00,-8.00","D":"-3.00,-5.00","E":"-6.29,-5.00","F":"-5.00,-8.00","G":"-7.00,-7.34","H":"-3.00,-5.66"},"collineations":{"0":"A###E###D","1":"D###H###C","2":"B###F###C","3":"A###G###B","4":"E###F","5":"G###H"},"variable-equals":{},"circles":[]}],"appliedproblems":{}}]}

NLP: (ExpressRelation:[key:]1),SquareRelation{square=Square:ABCD},LinePerpRelation{line1=DF, line2=AE, crossPoint=},LineCrossRelation [crossPoint=Optional.of(F), iLine1=DF, iLine2=AB],(ExpressRelation:[key:]2),SquareRelation{square=Square:ABCD},PointOnLineRelation{point=E, line=AD, isConstant=false, extension=false},PointOnLineRelation{point=F, line=BC, isConstant=false, extension=false},PointOnLineRelation{point=G, line=AB, isConstant=false, extension=false},PointOnLineRelation{point=H, line=CD, isConstant=false, extension=false},LinePerpRelation{line1=EF, line2=GH, crossPoint=},Calculation:(ExpressRelation:[key:]((EF)/(GH))),(ExpressRelation:[key:]3),RectangleRelation{rectangle=Rectangle:ABCD},EqualityRelation{AB=a},EqualityRelation{BC=b},PointOnLineRelation{point=E, line=AD, isConstant=false, extension=false},PointOnLineRelation{point=F, line=BC, isConstant=false, extension=false},LinePerpRelation{line1=EF, line2=GH, crossPoint=},Calculation:(ExpressRelation:[key:]((EF)/(GH))),ProveConclusionRelation:[Proof: EqualityRelation{AE=DF}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]((EF)/(GH)))},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]((EF)/(GH)))}

375, topic: As shown, the E line segment CD, AE, BE are equally ∠DAB, ∠CBA, ∠AEB =90 ° is provided AD =x, BC =y, and $ {{(x-3)} ^. {2}} + | y-4 |.. =0 $ #% # (1) BC and AD seek long-#% # (2) Do you think there is anything to BC and AD? And verify your conclusion. #% # (3) you can find the length of AB do? If we can, please write reasoning process; if not, please explain why #% # <img>.

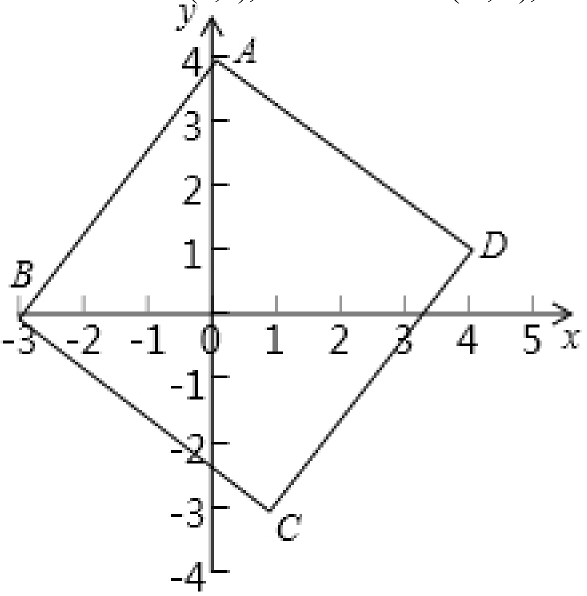


graph:

{"stem":{"pictures":[{"picturename":"CC7C7051D87C463686BEEE9C76F4F82E.jpg","coordinates":{"A":"-14.00,3.00","B":"-7.00,3.00","C":"-4.92,6.41","D":"-12.44,5.56","E":"-8.68,5.99"},"collineations":{"0":"B###A","1":"E###A","2":"A###D","3":"B###C","4":"B###E","5":"C###D###E"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[{"substemid":"2","questionrelies":"1","pictures":[],"appliedproblems":{}},{"substemid":"3","questionrelies":"1","pictures":[],"appliedproblems":{}}]}

NLP: PointOnLineRelation {point =E, line =CD, isConstant =false, extension =false}, AngleBisectorRelation {line =AE, angle =∠BAD, angle1 =∠BAE, angle2 =∠DAE}, AngleBisectorRelation {line =BE, angle =∠ABC, angle1 =∠ABE, angle2 =∠CBE}, EqualityRelation {∠AEB =(1/2 * Pi)}, EqualityRelation {AD =x}, EqualityRelation {BC =y}, EqualityRelation {((x-3) ^ 2) + abs (y-4) =0}, evaluation (size) :(ExpressRelation: [key:] AD), evaluation (size) :(ExpressRelation: [key:] BC), evaluation (size) :(ExpressRelation: [key:] (AD / BC)), EqualityRelation {AB =v_0}, evaluation (size) :(ExpressRelation: [key:] v_0), SolutionConclusionRelation {relation =evaluator (size): (ExpressRelation: [key:] AD)}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] BC)}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] (AD / BC))}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] AB)}

376, topic: square ABCD position in the plane rectangular coordinate system in the figure, the known coordinates A (0,4), B coordinates (-3, 0), find the coordinates of the point C #% # <img>.



graph: {"stem":{"pictures":[{"picturename":"1000071172_Q_1.jpg","coordinates":{"A":"0.00,4.00","B":"-3.00,0.00","C":"1.00,-3.00","D":"4.00,1.00"},"collineations":{"0":"A###B","1":"B###C","2":"C###D","3":"A###D"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: SquareRelation {square =Square: ABCD}, PointRelation: A (0,4), PointRelation: B (-3,0), coordinates PointRelation: C, SolutionConclusionRelation {relation =coordinates PointRelation: C}

377, topic: FIG, known line $ {{l} _ {1}} \parallel {{l} _ {2}} $, the straight line segment AB $ {{l} _ {1}} $ on, BC perpendicular to $ {{l} _ {1}} $ deposit $ {{l} _ {2}} $ at points C, and AB =BC, P is a point different from the end points of the line segment BC, through the point P the straight lines cross $ {{l} _ {2}} $, $ {{l} _ {1}} $ at point D, E (points a, E on both sides of point B), satisfies BP =BE, connected AP, CE #% # (1) Prove:... △ABP≌△CBE #% # (2) connected to AD, BD, BD intersect with the AP at point F. FIG. 2 #% # ① when $ \ FRAC {BC} {BP} =2 $, the confirmation: AP⊥BD; #% # ② when $ \ frac {BC} {BP} =n \ left (n＞1 \ right) $, the area provided △PAD to $ {{S} _ {1}} $, △PCE area is $ {{S} _ {2}} $, seeking $ \ frac {{{S} _ {1}}} {{{S} _ {2}}} value of $. #% # <img>

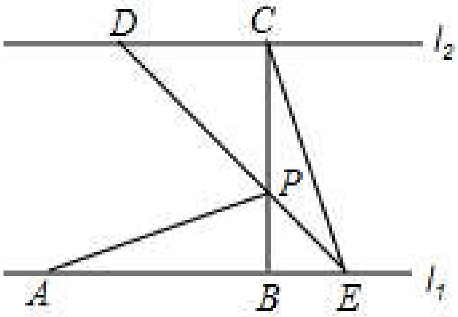


图1

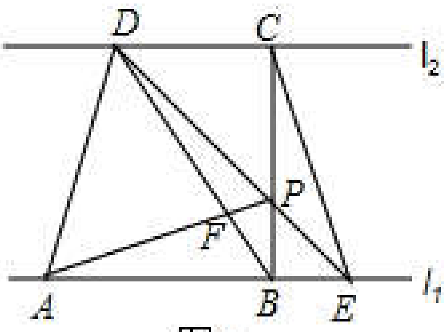


图2

graph:
{"stem":{"pictures":[{"picturename":"CD93591A85714CE598CDA550B4465F6F.jpg","coordinates":{"A":"-12.00,3.00","B":"-8.00,3.00","C":"-8.00,7.00","D":"-10.00,7.00","E":"-6.00,3.00","F":"-8.80,4.60","P":"-8.00,5.00"},"collineations":{"0":"B###E###A","1":"E###A###P","2":"A###D","3":"B###D###F","4":"B###P###C","5":"C###E","6":"E###D###P","7":"C###D"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[{"substemid":"2","questionrelies":"1","pictures":[],"appliedproblems":{}}]}

NLP: PointRelation:A,LineParallelRelation [iLine1=StraightLine[l_1] analytic :y=k_l_1*x+b_l_1 slope:null b:null isLinearFunction:false, iLine2=StraightLine[l_2] analytic :y=k_l_2*x+b_l_2 slope:null b:null isLinearFunction:false],LineCoincideRelation [iLine1=AB, iLine2=AE],LinePerpRelation{line1=AB, line2=BC, crossPoint=B},EqualityRelation{AB=BC},PointInsideSegmentRelation{point=P, segment=BC},EqualityRelation{BP=BE},SegmentRelation:AP,SegmentRelation:CE,PointOnLineRelation{point=P, line=ED, isConstant=false, extension=false},MultiPointCollinearRelation:[A, D],MultiPointCollinearRelation:[B, D],LineCrossRelation [crossPoint=Optional.of(F), iLine1=AP, iLine2=BD],(ExpressRelation:[key:]2),EqualityRelation{((BC)/(BP))=2},EqualityRelation{((BC)/(BP))=n, Condition:
[[n>1]]},EqualityRelation{S_△ADP=S_1},EqualityRelation{S_△CEP=S_2},Calculation:(ExpressRelation:[key:](S_1/S_2)),ProveConclusionRelation:[Proof: TriangleCongRelation{triangleA=△ABP, triangleB=△CBE}],ProveConclusionRelation:[Proof: LinePerpRelation{line1=AP, line2=BD, crossPoint=}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:](S_1/S_2))}

378, topic: 1, O is the square ABCD intersection of two diagonal lines, respectively, extend to OD G, OC point E, so OG =2OD, OE =2OC, then OG, OE adjacent sides of a square as OEFG, connected AG, DE #% # (1) Prove:. DE⊥AG; #% # (2) is fixed a square ABCD, the square OEFG rotation angle [alpha] (0 ° <α <360 °) counter-clockwise about the point O to give square OE'F'G ', 2 #% # ① during rotation, as shown in FIG ∠OAG' is a right angle, the degree of α seeking; #% # ② If the length of a side of the square ABCD 1, during the rotation of in seeking AF 'long and the maximum degree at this time α, not necessarily a direct result of write reasons. #% # <img>

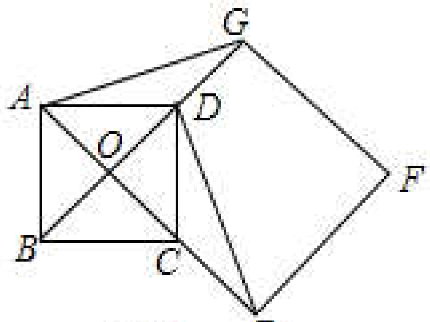


图1

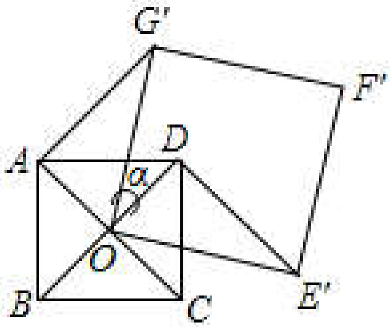
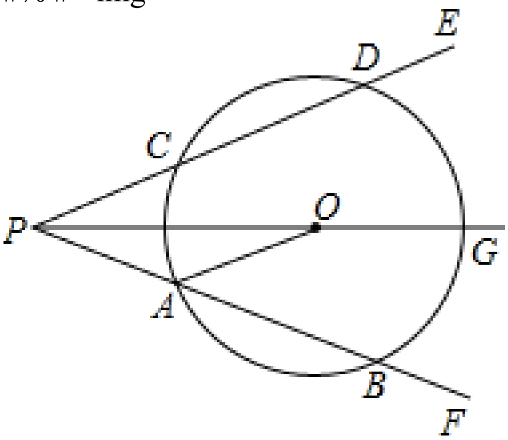


图2

graph:
{"stem":{"pictures":[{"picturename":"1000061933_Q_1.jpg","coordinates":{"A":"0.00,4.00","B":"0.00,0.00","C":"4.00,0.00","D":"4.00,4.00","E":"6.00,-2.00","F":"10.00,2.00","G":"6.00,6.00","O":"2.00,2.00"},"collineations":{"0":"A###B","1":"B###C","2":"A###G","3":"A###D","4":"D###E","5":"G###F","6":"F###E","7":"D###C","8":"A###O###C###E","9":"B###O###D###G"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[{"substemid":"2","questionrelies":"","pictures":[{"picturename":"1000061933_Q_1.jpg","coordinates":{"A":"12.00,4.00","B":"12.00,0.00","C":"16.00,0.00","D":"16.00,4.00","E'":"19.46,0.54","F'":"20.93,6.00","G'":"15.46,7.46","O":"14.00,2.00"},"collineations":{"0":"A###B","1":"B###C","2":"A###G'","3":"A###D","4":"D###E'","5":"G'###F'","6":"F'###E'","7":"D###C","8":"O###G'","9":"O###E'","10":"A###O###C","11":"B###O###D"},"variable-equals":{"0":"∠α=∠DOG'"},"circles":[]}],"appliedproblems":{}}]}

NLP: SquareRelation{square=Square:ABCDintersection : O},PointOnLineRelation{point=E, line=OC, isConstant=false, extension=false},EqualityRelation{GO=2*DO},EqualityRelation{EO=2*CO},SquareRelation{square=Square:EFGO},SegmentRelation:AG,SegmentRelation:DE,ThreeItemsInequalityRelation{multiExpressCompare:(0*Pi)<α<(2*Pi)},SquareRelation{square=Square:ABCD},Calculation:(ExpressRelation:[key:]α),EqualityRelation{AF'=v_0},SquareRelation{square=Square:ABCD, length=1},ProveConclusionRelation:[Proof: LinePerpRelation{line1=DE, line2=AG, crossPoint=}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]α)}

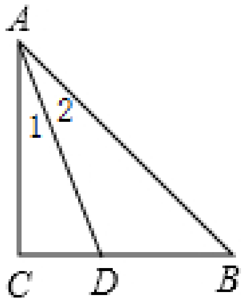
379, topic: FIG ray equally ∠EPF PG, PG O to a point on the ray, is at the center O, radius for the $ 10 \ O $ ODOT, respectively intersects sides ∠EPF A, B and C, D, link OA, at this time there OA // PE #% # (1) Prove:. AP =AO; #% # (2) when the $ \ tan \ angle OPB =\ frac {1} {2} $, seeking the chord AB long. #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000060823_Q_1.jpg","coordinates":{"A":"-4.47,-2.24","B":"0.88,-4.92","C":"-4.47,2.24","D":"0.88,4.92","O":"0.00,0.00","E":"2.40,5.68","F":"2.50,-5.73","G":"5.99,0.00","P":"-8.94,0.00"},"collineations":{"0":"P###C###D###E","1":"P###O###G","2":"A###F###P###B","3":"A###O"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"A###B###C###D"}]}],"appliedproblems":{}},"substems":[]}

NLP: AngleBisectorRelation{line=PG,angle=∠APC, angle1=∠APG, angle2=∠CPG},PointOnLineRelation{point=O, line=PG, isConstant=false, extension=false},CircleRelation{circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2, radiusLength=Express:[10], diameterLength=Express:[20]}},SegmentRelation:OA,LineParallelRelation[iLine1=OA, iLine2=PE],EqualityRelation{tan(∠APO)=(1/2)},Calculation:(ExpressRelation:[key:]AB),ProveConclusionRelation:[Proof: EqualityRelation{AP=AO}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]AB)}

380, topic: As shown in the Rt △ABC, ∠C =90 °, BC =AC, ∠B =∠CAB =45 °, AD bisects ∠BAC BC at D, Proof: AB =AC + CD # % # <img>



graph:
{"stem":{"pictures":[{"picturename":"CFF155B37D724B559C24B879D0188E70.jpg","coordinates":{"A":"-14.00,3.00","B":"-10.00,3.00","C":"-14.00,3.00","D":"-12.34,3.00"},"collineations":{"0":"B###A","1":"A###C","2":"A###D","3":"B###D###C"},"variable-equals":{"0":"∠1=∠DAC","1":"∠2=∠DAB"},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: RightTriangleRelation:RightTriangle:△ABC[Optional.of(A)],EqualityRelation{∠ACD=(1/2*Pi)},EqualityRelation{BC=AC},MultiEqualityRelation [multiExpressCompare=∠ABD=∠BAC=(1/4*Pi), originExpressRelationList=[], keyWord=null, result=null],AngleBisectorRelation{line=AD,angle=∠BAC, angle1=∠BAD, angle2=∠CAD},LineCrossRelation [crossPoint=Optional.of(D), iLine1=AD, iLine2=BC],ProveConclusionRelation:[Proof: EqualityRelation{AB=AC+CD}]

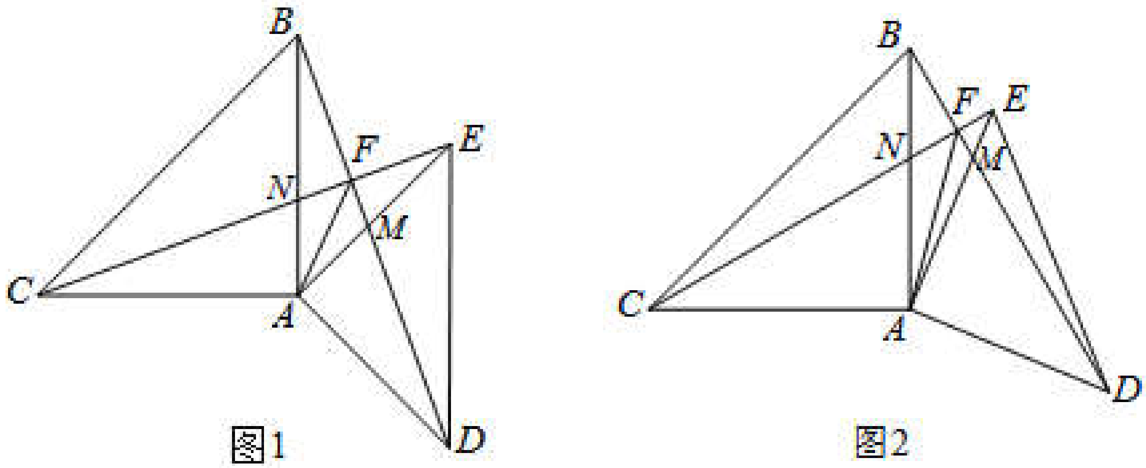
381, topic: is known, as shown, the straight line MN in cross \$ ⊙O \$ A, B points, the AC is the diameter, the AD bisects deposit \$ ∠CAM \$ D \$ ⊙O \$ in, for over \$ DE⊥MN \$ D to E. ?% # # (1) Proof: DE is tangent \$ ⊙O \$;% # # (2) When the \$ DE =6cm \$, \$ AE =3cm \$, \$ ⊙O \$ find the radius?. <Img>

graph:
{"stem":{"pictures":[{"picturename":"1000008333_Q_1.jpg","coordinates":{"A":"-4.50,-6.00","B":"4.50,-6.00","C":"4.50,6.00","D":"-7.50,0.00","E":"-7.50,-6.00","M":"-12.61,-6.00","N":"13.15,-6.00","O":"0.00,0.00"},"collineations":{"0":"D###A","1":"A###E###B###M###N","2":"E###D","3":"O###A###C"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"C###B###A###D"}]}],"appliedproblems":{}},"substems":[]}

NLP: LineCrossCircleRelation{line=MN, circle=⊙O, crossPoints=[A, B], crossPointNum=2},DiameterRelation{diameter=AC, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, length=null},AngleBisectorRelation{line=AD,angle=∠EAO, angle1=∠DAE, angle2=∠DAO},LineCrossCircleRelation{line=AD, circle=⊙O, crossPoints=[D], crossPointNum=1},LinePerpRelation{line1=DE, line2=MN, crossPoint=E},AngleBisectorRelation{line=AD,angle=∠EAO, angle1=∠DAE, angle2=∠DAO},EqualityRelation{DE=6},EqualityRelation{AE=3},圆的半径：CircleRelation{circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}},ProveConclusionRelation:[Proof: LineContactCircleRelation{line=DE, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, contactPoint=Optional.of(D), outpoint=Optional.of(E)}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]CO)}

382, topic: FIG known △ABC and △ADE are right isosceles triangle, ∠BAC =∠DAE =90 °, AB

=AC, AD =AE, BD is connected to the cross M AE, CE connected to the cross-AB N, BD and CE intersection is F, connected to the AF #% # (1) in FIG. 1, Proof: BD⊥CE; #% # (2) in FIG. 1, Proof: FA is the bisector ∠CFD; #% # (3) in FIG. 2, when $ AC =2 \ sqrt {3} $, ∠BCE =15 °, the CF rectification. #% # <img>



graph:
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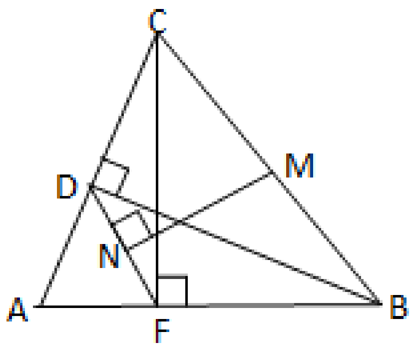
NLP:
IsoscelesRightTriangleRelation:IsoscelesRightTriangle:IsoscelesTriangle:△ABC[Optional.of(A)][Optional.of(A)],IsoscelesRightTriangleRelation:IsoscelesRightTriangle:IsoscelesTriangle:△ADE[Optional.of(A)][Optional.of(A)],MultiEqualityRelation [multiExpressCompare=∠CAN=∠DAM=(1/2*Pi), originExpressRelationList=[], keyWord=null, result=null],EqualityRelation{AB=AC},EqualityRelation{AD=AE},LineCrossRelation [crossPoint=Optional.of(M), iLine1=BD, iLine2=AE],LineCrossRelation [crossPoint=Optional.of(N), iLine1=CE, iLine2=AB],LineCrossRelation [crossPoint=Optional.of(F), iLine1=BD, iLine2=CE],SegmentRelation:AF,(ExpressRelation:[key:]1),(ExpressRelation:[key:]1),EqualityRelation{CF=v_0},(ExpressRelation:[key:]2),EqualityRelation{AC=2*(3^(1/2))},EqualityRelation{∠BCN=(1/12*Pi)},Calculation:(ExpressRelation:[key:]v_0),ProveConclusionRelation:[Proof: LinePerpRelation{line1=BD, line2=CE, crossPoint=F}],ProveConclusionRelation:[Proof: AngleBisectorRelation{line=FA,angle=∠MFN, angle1=∠AFM, angle2=∠AFN}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]CF)}

383, topic: As shown in the △ABC, BD, CF are AC, AB high edge, M being the midpoint of BC, N is the midpoint of the confirmation DF:.. MN⊥DF #% # <img >



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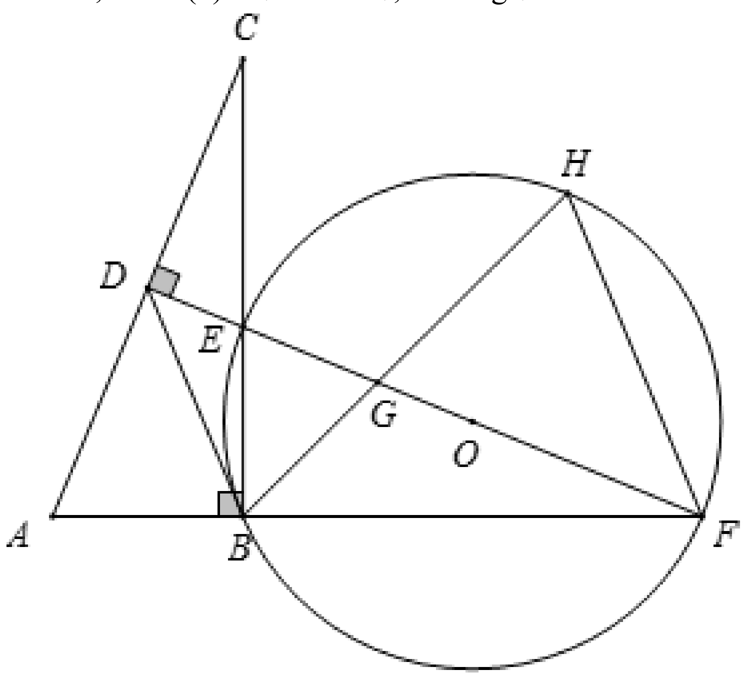
NLP: TriangleRelation:△ABC,LinePerpRelation{line1=BD, line2=AC, crossPoint=D},LinePerpRelation{line1=CF, line2=AB, crossPoint=F},MiddlePointOfSegmentRelation{middlePoint=M,segment=BC},MiddlePointOfSegmentRelation{middlePoint=N,segment=DF},ProveConclusionRelation:[Proof: LinePerpRelation{line1=MN, line2=DF, crossPoint=N}]

384, topic: FIG at $ Rt \ vartriangle ABC $ in, $ \ angle ABC =90 {} ^ \ circ $, $ AC $ perpendicular bisector respectively $ AC $, $ BC $ and $ a $ AB extended line at point $ D $, $ E $, $ F $, and $ BF =BC $. $ \ odot O $ a $ \ vartriangle BEF $ circumscribed circle, $ \ angle EBF $ $ EF cross bisector $ at a point $ G $, pay $ \ odot O $ at a point $ H $, connected $ BD $, $ FH $ #% # (1) Proof: $ \ vartriangle ABC \ cong \ vartriangle EBF $; #% #. (2) test determines the positional relationship $ the BD $ and $ \ odot O $ of reasons; #% # (3) if $ AB =1 $, seeking $ HG \ value cdot HB $ a #% # <img. >



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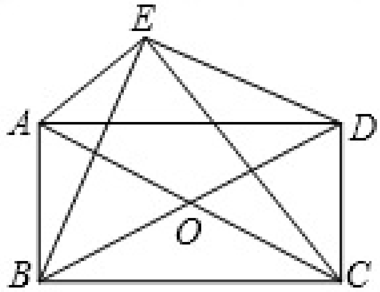
2.50,1.12"},"collineations":{"0":"A###B###F","1":"A###D###C","2":"C###E###B","3":"D###B","4":"D###E###G###O###F","5":"B###G###H","6":"H###F"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"E###B###F###H"}]}],"appliedproblems":{}},"substems":[]}

NLP: MiddlePerpendicularRelation [iLine1=ED, iLine2=AC, crossPoint=Optional.of(D)],AngleBisectorRelation{line=BH,angle=∠EBF, angle1=∠EBH, angle2=∠FBH},RightTriangleRelation:RightTriangle:△ABC[Optional.of(B)],EqualityRelation{∠ABE=(1/2*Pi)},PointRelation:E,PointRelation:F,EqualityRelation{BF=BC},InscribedShapeOfCircleRelation{closedShape=△BEF, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}},SegmentRelation:BD,PointRelation:F,EqualityRelation{AB=1},Calculation:(ExpressRelation:[key:]GH*BH),ProveConclusionRelation:[Proof: TriangleCongRelation{triangleA=△ABC, triangleB=△EBF}],JudgePostionConclusionRelation: [data1=BD, data2=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]GH*BH)}

385, topic: Given: FIG, AC, BD intersect at point O, and O is the midpoint of AC, BD, and point E in an outer quadrilateral ABCD, and ∠AEC =∠BED =90 ° #% # confirmation: the quadrilateral ABCD is a rectangle. #% # <img>



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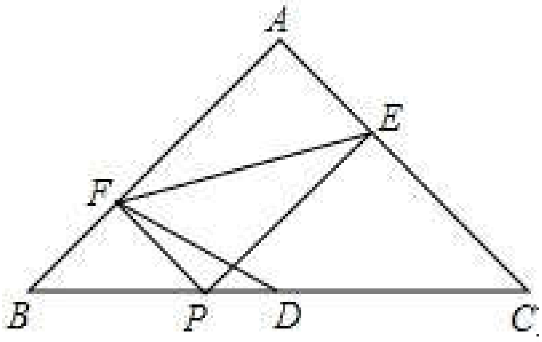
NLP: LineCrossRelation [crossPoint=Optional.of(O), iLine1=AC, iLine2=BD],MiddlePointOfSegmentRelation{middlePoint=O,segment=AC},MiddlePointOfSegmentRelation{middlePoint=O,segment=BD},PositionOfPoint2RegionRelation{point=E, region=EnclosedRegionRelation{name=ABCD, closedShape=ABCD}, position=outer},MultiEqualityRelation [multiExpressCompare=∠AEC=∠BED=(1/2*Pi), originExpressRelationList=[], keyWord=null, result=null],ProveConclusionRelation:[Proof: RectangleRelation{rectangle=Rectangle:ABCD}]

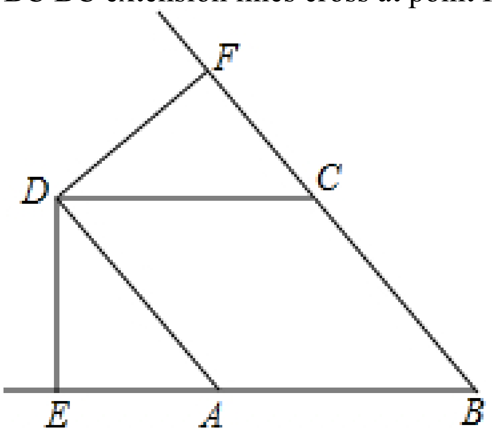
386, topic: As shown in isosceles $ Rt \ vartriangle ABC $ in, $ \ angle A =90 ^ \ circ $, $ D $ is the midpoint of the BC $ $ $ point P is taken in $ $ $ DB office. ., over $ P $ for two vertical sections of lumbar $ PF $, $ PE $, $ EF confirmation is connected $: $ {EF} ^ {2} =2 {DF} ^ {2} $.



graph:
{"stem":{"pictures":[{"picturename":"1000005497_Q_1.jpg","coordinates":{"A":"-6.61,4.00","B":"-12.65,-2.41","C":"-0.21,-2.04","D":"-6.43,-2.22","E":"-4.20,1.72","F":"-10.37,0.00","P":"-7.96,-2.27"},"collineations":{"0":"A###F###B","1":"B###P###D###C","2":"A###E###C","3":"E###F","4":"F###P","5":"F###D","6":"E###P"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP:
IsoscelesRightTriangleRelation:IsoscelesRightTriangle:IsoscelesTriangle:△ABC[Optional.of(A)][Optional.of(A)],EqualityRelation{∠EAF=(1/2*Pi)},MiddlePointOfSegmentRelation{middlePoint=D,segment=BC},PointOnLineRelation{point=P, line=DB, isConstant=false, extension=false},SegmentRelation:PE,SegmentRelation:EF,ProveConclusionRelation:[Proof: EqualityRelation{(EF)^2=2*(DF)^2}]

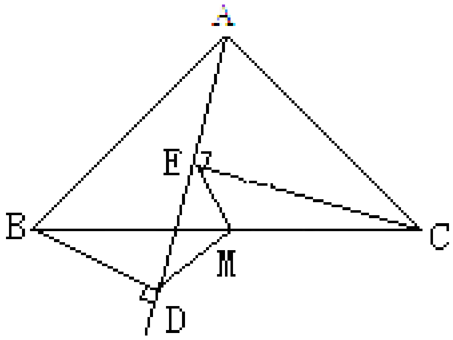
387, topic: FIG., A diamond quadrangle ABCD, DE⊥AB extension line BA in the cross point E, DF⊥BC BC extension lines cross at point F. Proof: DE =DF #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000040921_Q_1.jpg","coordinates":{"A":"-3.02,0.00","B":"0.00,0.00","C":"-1.51,2.61","D":"-4.52,2.61","E":"-4.52,0.00","F":"-2.26,3.92"},"collineations":{"0":"E###A###B","1":"B###C###F","2":"C###D","3":"D###A","4":"D###E","5":"D###F"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: RhombusRelation{rhombus=Rhombus:ABCD},LinePerpRelation{line1=DE, line2=AB, crossPoint=E},LineCrossRelation [crossPoint=Optional.of(E), iLine1=DE, iLine2=BA],LinePerpRelation{line1=DF, line2=BC, crossPoint=F},LineCrossRelation [crossPoint=Optional.of(F), iLine1=DF, iLine2=BC],ProveConclusionRelation:[Proof: EqualityRelation{DE=DF}]

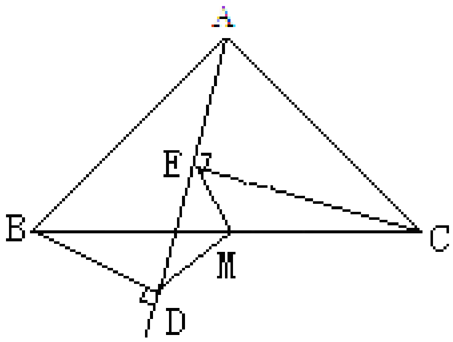
388, topic: FIG known, △ABC medium, CE⊥AD in E, BD⊥AD in D, BM =CM Proof:. ME =MD #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000040695_Q_1.jpg","coordinates":{"A":"-6.35,5.21","B":"-9.00,2.00","C":"-4.00,2.00","D":"-7.26,1.57","E":"-6.97,2.74","M":"-6.50,2.00"},"collineations":{"0":"A###B","1":"A###C","2":"B###M###C","3":"A###E###D","4":"D###B","5":"D###M","6":"M###E","7":"E###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleRelation:△ABC,LinePerpRelation{line1=CE, line2=AD, crossPoint=E},LinePerpRelation{line1=BD, line2=AD, crossPoint=D},EqualityRelation{BM=CM},ProveConclusionRelation:[Proof: EqualityRelation{EM=DM}]

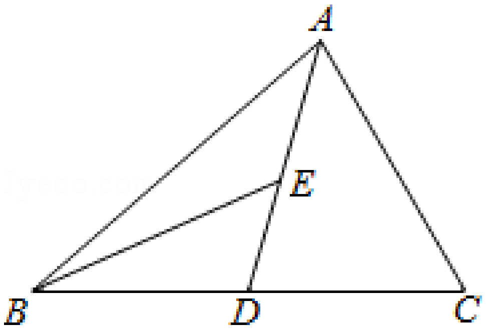
389, topic: FIG known, △ABC medium, CE⊥AD in E, BD⊥AD in D, BM =CM Proof:. ME =MD #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000040695_Q_1.jpg","coordinates":{"A":"-6.35,5.21","B":"-9.00,2.00","C":"-4.00,2.00","D":"-7.26,1.57","E":"-6.97,2.74","M":"-6.50,2.00"},"collineations":{"0":"A###B","1":"A###C","2":"B###M###C","3":"A###E###D","4":"D###B","5":"D###M","6":"M###E","7":"E###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleRelation:△ABC,LinePerpRelation{line1=CE, line2=AD, crossPoint=E},LinePerpRelation{line1=BD, line2=AD, crossPoint=D},EqualityRelation{BM=CM},ProveConclusionRelation:[Proof: EqualityRelation{EM=DM}]

390, topic:. As shown, AD is a center line of △ABC, BE midline of △ABD #% # (1) ∠ABE =15 °, ∠BAD =35 °, the degree of seeking ∠BED;% # # (2) △BED high as in the edge of the BD; #% # (3) If the area of △ABC is 60, BD =5, point E to find the distance BC side.

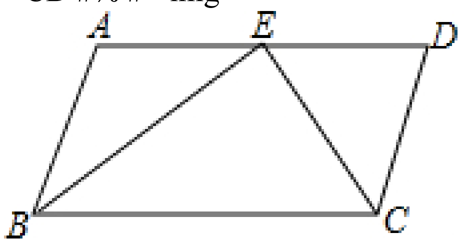


graph:

{"stem":{"pictures":[{"picturename":"E98182335CBC4D6F94BF02FCD7004D48.jpg","coordinates":{"A":"-10.00,7.00","B":"-14.00,3.00","C":"-8.00,3.00","D":"-11.00,3.00","E":"-10.50,5.00"},"collineations":{"0":"B###A","1":"D###E###A","2":"B###D###C","3":"B###E","4":"A###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleRelation:△ABC,TriangleRelation:△ABD,MidianLineOfTriangleRelation{midianLine=AD, triangle=△ABC, top=A, bottom=BC},MidianLineOfTriangleRelation{midianLine=BE, triangle=△BDA, top=B, bottom=DA},EqualityRelation{∠ABE=(1/12*Pi)},EqualityRelation{∠BAE=(7/36*Pi)},Calculation:AngleRelation{angle=∠BED},LineRoleRelation{Segment=M_0N_0, roleType=HEIGHT},PointToLineDistanceRelation{point=E, line=BC, distance=Express:[v_1]},EqualityRelation{S_△ABC=60},EqualityRelation{BD=5},Calculation:(ExpressRelation:[key:]v_1),SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]∠BED)},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]v_1)}

391, topic: FIG, AB // CD, CE, BE and are equally ∠BCD ∠CBA, point E on AD, Proof: . BC =AB + CD #% # <img>



graph:

{"stem":{"pictures":[{"picturename":"20A7BB2E2B444A19AD663B9D6E2A8E49.jpg","coordinates":{"A":"-12.51,5.98","B":"-14.00,3.00","C":"-8.00,3.00","D":"-6.81,5.39","E":"-9.66,5.68"},"collineations":{"0":"A###E###D","1":"B###A","2":"C###E","3":"B###C","4":"B###E","5":"C###D"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

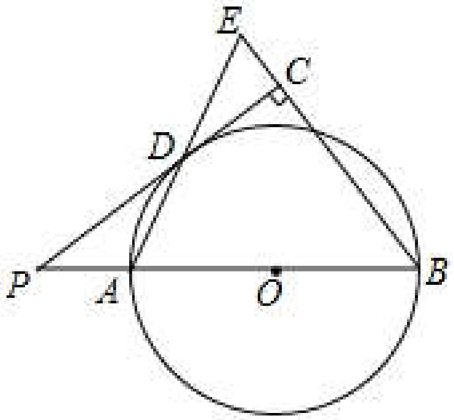
NLP: LineParallelRelation [iLine1=AB, iLine2=CD],AngleBisectorRelation{line=CE,angle=∠BCD, angle1=∠BCE, angle2=∠DCE},AngleBisectorRelation{line=BE,angle=∠ABC, angle1=∠ABE, angle2=∠CBE},PointOnLineRelation{point=E, line=AD, isConstant=false, extension=false},ProveConclusionRelation:[Proof: EqualityRelation{BC=AB+CD}]

392, topic: FIG, AB is the diameter of $ ⊙O $, CB, CD were cut to $ ⊙O $ B, D two, E point on the extension line of the CD, and $ CE =AE + BC $; ?% # # (1) Prove:? AE is $ ⊙O $ tangent;% # # (2) through the point D as $ DF⊥AB $ at point F, DF is connected to a cross point bE M, Proof: $ DM =MF $. <Img>

graph:
{"stem":{"pictures":[{"picturename":"1000008338_Q_1.jpg","coordinates":{"A":"-5.00,0.00","B":"5.00,0.00","C":"5.00,6.10","D":"-0.98,4.90","E":"-5.00,4.10","F":"-0.98,0.00","M":"-0.98,2.45","O":"0.00,0.00"},"collineations":{"0":"D###E###C","1":"A###E","2":"M###D###F","3":"E###M###B","4":"C###B","5":"A###F###O###B"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"B###A###D"}]}],"appliedproblems":{}},"substems":[]}

NLP: DiameterRelation{diameter=AB, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, length=null},LineContactCircleRelation{line=CB, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, contactPoint=Optional.of(B), outpoint=Optional.of(C)},LineContactCircleRelation{line=CD, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, contactPoint=Optional.of(D), outpoint=Optional.of(C)},PointOnLineRelation{point=E, line=CD, isConstant=false, extension=true},EqualityRelation{CE=AE+BC},LinePerpRelation{line1=DF, line2=AB, crossPoint=F},LineCrossRelation [crossPoint=Optional.of(M), iLine1=BE, iLine2=DF],ProveConclusionRelation:[Proof: LineContactCircleRelation{line=AE, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, contactPoint=Optional.of(A), outpoint=Optional.of(E)}],ProveConclusionRelation:[Proof: EqualityRelation{DM=FM}]

393, topic: FIG known ⊙O AB is the diameter of the point P on the extension line of BA, PD ⊙O cut at points D, through the point B perpendicular to the BE for PD, PD extension lines cross at point C connecting AD and extended cross-BE at point E #% # (1) Prove:. AB =BE; #% # (2) when the PA =2, $ \ cos B =\ frac {3} {5} $, ⊙O seeking long radius. #% # <img>

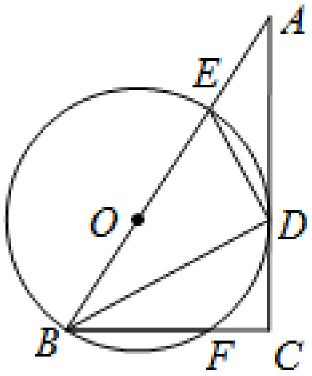


graph:
{"stem":{"pictures":[{"picturename":"1000052553_Q_1.jpg","coordinates":{"A":"-5.17,-0.66","B":"0.83,-0.66","C":"-2.07,3.18","D":"-3.97,1.74","E":"-2.78,4.13","O":"-2.17,-0.66","P":"-7.17,-0.66"},"collineations":{"0":"A###D###E","1":"B###C###E","2":"P###D###C","3":"P###A###O###B"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"A###B###D"}]}],"appliedproblems":{}},"substems":[]}

NLP: DiameterRelation{diameter=AB, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, length=null},PointOnLineRelation{point=P, line=BA, isConstant=false, extension=true},LineContactCircleRelation{line=PD, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, contactPoint=Optional.of(D), outpoint=Optional.of(P)},LinePerpRelation{line1=BE, line2=PD, crossPoint=C},LineCrossRelation [crossPoint=Optional.of(C), iLine1=BE, iLine2=PD],SegmentRelation:AD,LineCrossRelation [crossPoint=Optional.of(E), iLine1=AD, iLine2=BE],EqualityRelation{AP=2},EqualityRelation{cos(∠CBO)=(3/5)},圆的半径：CircleRelation{circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}},ProveConclusionRelation:[Proof: EqualityRelation{AB=BE}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]AO)

}

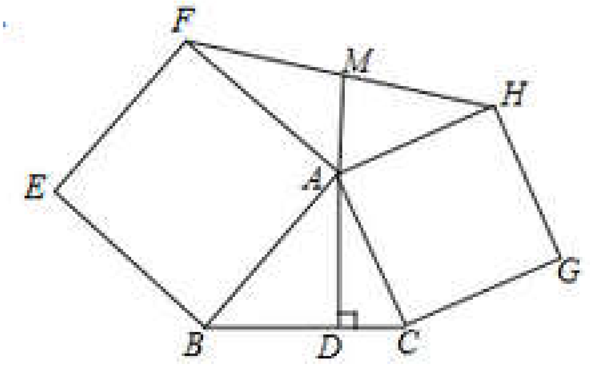
394, topic: As shown in the △ABC, BC =9, CA =12, AB =15, ∠ABC bisector AC BD cross at point D, DE⊥DB cross AB at point E. Proof: #% # (1) △ABC is a right triangle;% # # (2) is provided ⊙O circumcircle △BDE, confirmation: AC is tangent ⊙O; at% # # (3) in (2) are satisfied, provided ⊙ O BC at point F, is connected EF, and seek long AE EF: the value of the AC #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000060814_Q_1.jpg","coordinates":{"A":"6.00,4.00","B":"3.00,0.00","C":"6.00,0.00","D":"6.00,1.50","E":"5.25,3.00","F":"5.25,0.00","O":"4.13,1.50"},"collineations":{"0":"A###E###O###B","1":"B###F###C","2":"C###D###A","3":"B###D","4":"D###E"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"B###F###D###E"}]}],"appliedproblems":{}},"substems":[]}

NLP: AngleBisectorRelation{line=BD,angle=∠FBO, angle1=∠DBF, angle2=∠DBO},TriangleRelation:△ABC,EqualityRelation{BC=9},EqualityRelation{AC=12},EqualityRelation{AB=15},LineCrossRelation [crossPoint=Optional.of(D), iLine1=BD, iLine2=AC],LinePerpRelation{line1=DE, line2=DB, crossPoint=D},LineCrossRelation [crossPoint=Optional.of(E), iLine1=DE, iLine2=AB],EqualityRelation{AE=v_0},LineCrossCircleRelation{line=BC, circle=⊙O, crossPoints=[F], crossPointNum=1},SegmentRelation:EF,Calculation:(ExpressRelation:[key:]v_0),Calculation:(ExpressRelation:[key:]EF/AC),ProveConclusionRelation:[Proof: RightTriangleRelation:RightTriangle:△ABC[Optional.of(C)]],ProveConclusionRelation:[InscribedShapeOfCircleRelation{closedShape=△BDE, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}}],ProveConclusionRelation:[Proof: LineContactCircleRelation{line=AC, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, contactPoint=Optional.of(D), outpoint=Optional.absent()}],ProveConclusionRelation:[SubStemReliedRelation{selfDivideId=-1, reliedDivideId=2}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]AE)},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]EF/AC)}

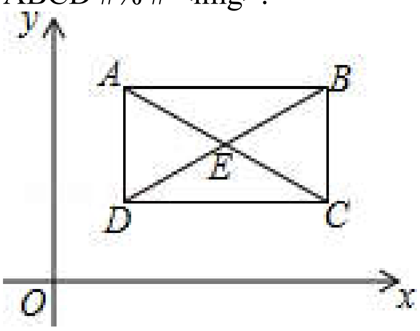
395, topic: FIG, respectively △ABC edges AB, AC and to one side for a square ABEF ACGH outside the triangle, M being the midpoint of the confirmation FH:.. MA⊥BC #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000040367_Q_1.jpg","coordinates":{"A":"-2.38,3.92","B":"-5.24,1.40","C":"-1.42,1.40","D":"-2.38,1.40","E":"-7.94,4.45","F":"-4.89,6.96","G":"1.09,2.36","H":"0.13,4.87","M":"-2.38,5.92"},"collineations":{"0":"A###C","1":"A###M###D","2":"A###B","3":"E###B","4":"C###D###B","5":"G###C","6":"G###H","7":"A###H","8":"A###F","9":"H###M###F","10":"E###F"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP:
TriangleRelation:△ABC,SquareRelation{square=Square:ABEF},SquareRelation{square=Square:ACGH},MiddlePointOfSegmentRelation{middlePoint=M,segment=FH},ProveConclusionRelation:[Proof: LinePerpRelation{line1=MA, line2=BC, crossPoint=D}]

396, topic: As shown in the plane rectangular coordinate system, the point A (2, n), B (m, n) (m＞2), D (p, q) (q <n), the point B, D linear $ y =\ frac {1} on the {2} x + 1 $. quadrangle ABCD diagonal AC, BD intersect at point E, and AB // CD, CD =4, BE =DE, △AEB area . #% # 2 Proof: a rectangular quadrangle ABCD #% # <img>.

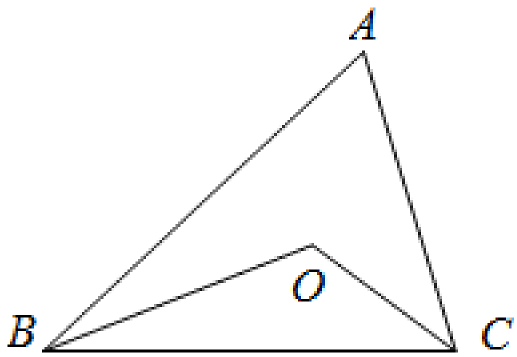


graph:
{"stem":{"pictures":[{"picturename":"1000040723_Q_1.jpg","coordinates":{"A":"0.00,1.72","B":"2.96,1.72","C":"2.96,0.00","D":"0.00,0.00","E":"1.48,0.86"},"collineations":{"0":"A###B","1":"B###C","2":"C###D","3":"D###A","4":"A###E###C","5":"B###E###D"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP:
InequalityRelation{m>2},PointRelation:A(2,n),PointRelation:B(m,n),PointRelation:D(p,q)*(q<n),PointOnLineRelation{point=B, line=StraightLine[n_0] analytic :y=1/2*x+1 slope:1/2 b:1 isLinearFunction:true, isConstant=false, extension=false},PointOnLineRelation{point=D, line=StraightLine[n_0] analytic :y=1/2*x+1 slope:1/2 b:1 isLinearFunction:true, isConstant=false, extension=false},Know:QuadrilateralRelation{quadrilateral=ABCD},LineCrossRelation [crossPoint=Optional.of(E), iLine1=AC, iLine2=BD],LineParallelRelation [iLine1=AB, iLine2=CD],EqualityRelation{CD=4},EqualityRelation{BE=DE},EqualityRelation{S_△ABE=2},ProveCo

nclusionRelation:[Proof: RectangleRelation{rectangle=Rectangle:ABCD}]

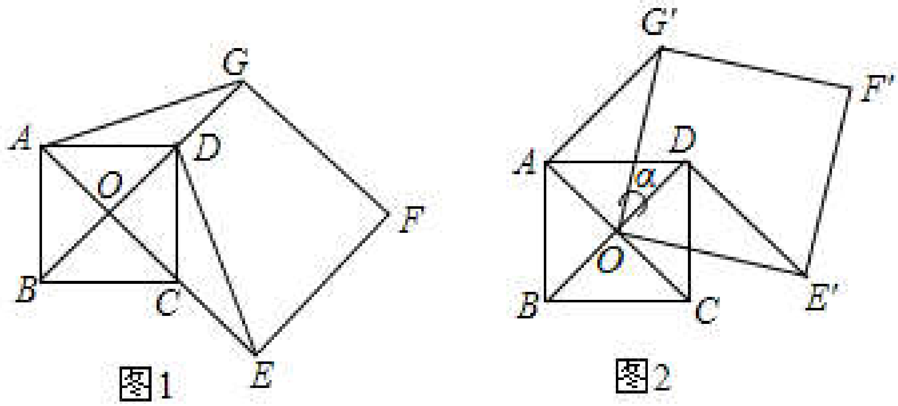
397, topic: FIG known point O △ABC in that, even BO, CO, Proof: $ AB + AC＞BO + CO $ #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000060374_Q_1.jpg","coordinates":{"A":"3.17,3.57","B":"0.00,0.00","C":"4.36,0.00","O":"2.69,1.21"},"collineations":{"0":"A###B","1":"A###C","2":"B###C","3":"B###O","4":"C###O"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: Segment Relation: BO segment relation: CO, ProveConclusionRelation: [证明: InequalityRelation {AB + AC＞BO + CO}]

398, topic: 1, O is the square ABCD intersection of two diagonal lines, respectively, extend to OD G, OC point E, so OG =2OD, OE =2OC, then OG, OE adjacent sides of a square as OEFG, connected AG, DE #% # (1) Prove:. DE⊥AG; #% # (2) is fixed a square ABCD, the square OEFG rotation angle [alpha] (0 ° <α <360 °) counter-clockwise about the point O to give square OE'F'G ', FIG. 2, during rotation, when ∠ OAG' is a right angle, the degree of α seeking. <img>

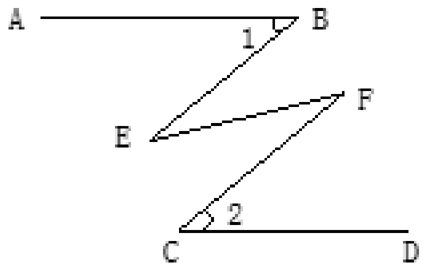


graph:
{"stem":{"pictures":[{"picturename":"1000061933_Q_1.jpg","coordinates":{"A":"0.00,4.00","B":"0.00,0.00","C":"4.00,0.00","D":"4.00,4.00","E":"6.00,-2.00","F":"10.00,2.00","G":"6.00,6.00","O":"2.00,2.00"},"collineations":{"0":"A###B","1":"B###C","2":"A###G","3":"A###D","4":"D###E","5":"G###F","6":"F###E","7":"D###C","8":"A###O###C###E","9":"B###O###D###G"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[{"substemid":"2","questionrelies":"","pictures":[{"picturename":"1000061933_Q_1.jpg","coordinates":{"A":"12.00,4.00","B":"12.00,0.00","C":"16.00,0.00","D":"16.00,4.00","E'":"19.46,0.54","F'":"20.93,6.00","G'":"15.46,7.46","O":"14.00,2.00"},"collineations":{"0":"A###B","1":"B###C","2":"A###G'","3":"A###D","4":"D###E'","5":"G'###F'","6":"F'###E'","7":"D###C","8":"O###G'","9":"O###E'","10":"A###O###C","11":"B###O###D"},"variable-equals":{"0":"∠α=∠

DOG'"},"circles":[]}],"appliedproblems":{}}]}

NLP: SquareRelation{square=Square:ABCDintersection : O},PointOnLineRelation{point=E, line=OC, isConstant=false, extension=false},EqualityRelation{GO=2*DO},EqualityRelation{EO=2*CO},SquareRelation{square=Square:EFGO},SegmentRelation:AG,SegmentRelation:DE,ThreeItemsInequalityRelation{multiExpressCompare:(0*Pi)<α<(2*Pi)},SquareRelation{square=Square:ABCD},Calculation:(ExpressRelation:[key:]α),ProveConclusionRelation:[Proof: LinePerpRelation{line1=DE, line2=AG, crossPoint=}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]α)}

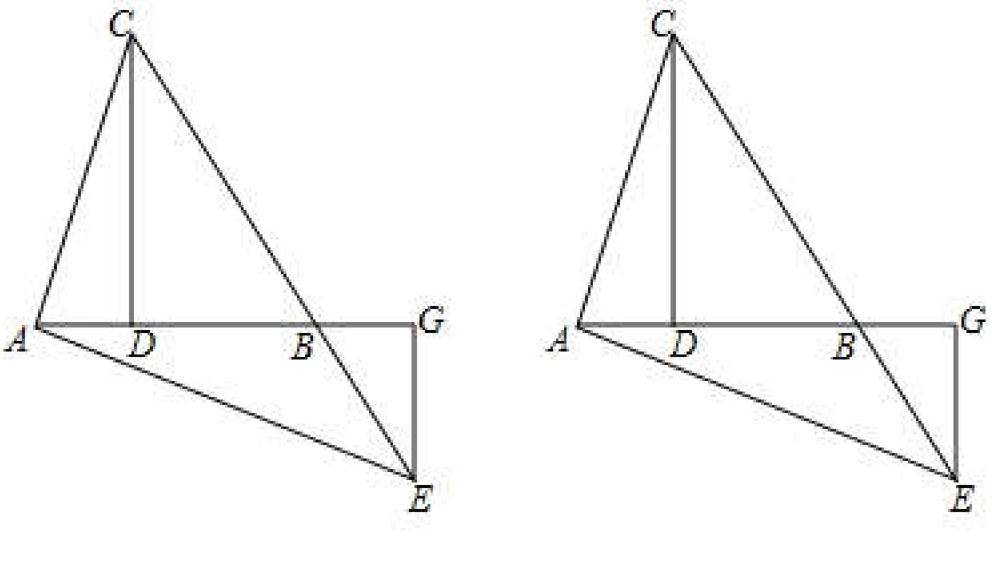
399, topic: ∠1 =∠2 FIG AB∥CD,, and sample size relationship described ∠BEF ∠EFC of #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000035800_Q_1.jpg","coordinates":{"A":"0.46,3.02","B":"3.00,3.00","C":"1.94,0.00","D":"4.81,-0.02","E":"1.19,1.22","F":"3.99,2.02"},"collineations":{"0":"A###B","1":"B###E","2":"E###F","3":"F###C","4":"C###D"},"variable-equals":{"0":"∠1=∠ABE","1":"∠2=∠DCF"},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: LineParallelRelation [iLine1 =AB, iLine2 =CD], EqualityRelation {∠ABE =∠DCF}, the digital comparator Size: DualExpressRelation {expresses =[Express: [∠CFE], Express: [∠BEF]]}, SolutionConclusionRelation {relation The digital comparator =size: DualExpressRelation {expresses =[Express: [∠CFE], Express: [∠BEF]]}}

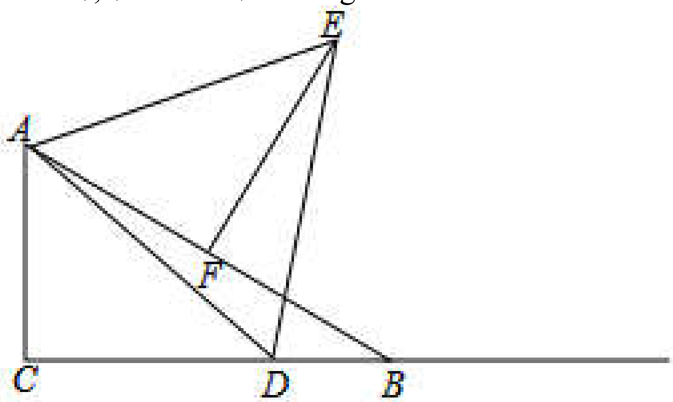
400, topic: Given: As shown in the △ABC, AC =AB, CD⊥AB at points D, cross over point A as AE⊥AC extension line CB at point E, EG⊥AB cross the extension line AB at point G. Proof: #% # <img＞#% # (1) EC bisects ∠AEG #% # (2) AD =BG

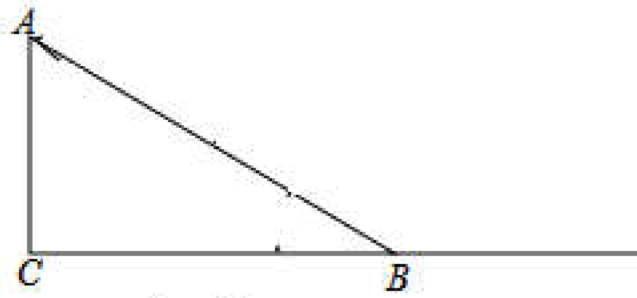


graph: {"stem":{"pictures":[{"picturename":"1000038099_Q_1.jpg","coordinates":{"A":"-4.34,-0.66","B":"-0.61,-0.66","C":"-2.91,2.78","D":"-2.91,-0.66","E":"0.81,-2.80","G":"0.81,-0.66"},"collineations":{"0":"A###D###B###G","1":"C###B###E","2":"C###A","3":"D###C","4":"E###G","5":"A###E"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleRelation:△ABC,EqualityRelation{AC=AB},LinePerpRelation{line1=CD, line2=AB, crossPoint=D},LinePerpRelation{line1=AE, line2=AC, crossPoint=A},LineCrossRelation [crossPoint=Optional.of(E), iLine1=AE, iLine2=CB],PointOnLineRelation{point=A, line=AE, isConstant=false, extension=false},LinePerpRelation{line1=EG, line2=AB, crossPoint=G},LineCrossRelation [crossPoint=Optional.of(G), iLine1=EG, iLine2=AB],ProveConclusionRelation:[Proof: AngleBisectorRelation{line=EC,angle=∠AEG, angle1=∠AEC, angle2=∠CEG}],ProveConclusionRelation:[Proof: EqualityRelation{AD=BG}]

401, topic: in the $ Rt △ABC $, $ ∠C =90 ° $, $ ∠B =30 ° $, $ AB =10 $, point D is a fixed point on the ray CB, $ △ADE $ is equilateral triangle, point F is the midpoint of AB, coupling EF (1) in FIG., a point D when the line segment CB, #% # ① Proof: $ △AEF≌ △ADC $; #% # ② connected bE , line segment $ CD =x $, segment $ BE =y $, seeking $ {{y} ^ {2}} - {{x} ^ {2}} $ #% # value (2) when $ ∠DAB when =15 ° $, $ △ADE $ seeking area.





(备用图)

graph: {"stem":{"pictures":[{"picturename":"1000026737_Q_1.jpg","coordinates":{"A":"0.00,5.00","B":"8.66,0.00","C":"0.00,0.00","D":"5.00,0.00","E":"6.83,6.84","F":"4.33,2.50"},"collineations":{"0":"C###D###B","1":"C###A","2":"A###F###B","3":"E###F","4":"A###E","5":"D###E","6":"A###D"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

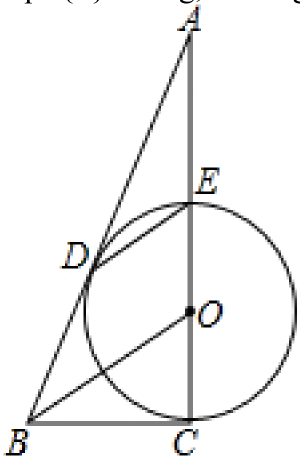
NLP: RightTriangleRelation:RightTriangle:△ABC[Optional.of(C)],EqualityRelation{∠ACD=(1/2*Pi)},EqualityRelation{∠DBF=(1/6*Pi)},EqualityRelation{AB=10},PointOnLineRelation{point=D, line=CB, isConstant=false, extension=false},RegularTriangleRelation:RegularTriangle:△ADE,MiddlePointOfSegmentRelation{middlePoint=F,segment=AB},PointOnLineRelation{point=D, line=CB, isConstant=false, extension=false},SegmentRelation:BE,EqualityRelation{CD=x},EqualityRelation{BE=y},Calculation:(ExpressRelation:[key:](y^2)-(x^2)),EqualityRelation{S_△ADE=v_0},EqualityRelation{∠DAF=(1/12*Pi)},Calculation:(ExpressRelation:[key:]v_0),ProveConclusionRelation:[Proof: TriangleCongRelation{triangleA=△AEF, triangleB=△ADC}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:](y^2)-(x^2))},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]S_△ADE)}

402, topic: FIG diameter known $ ⊙O $ AB perpendicular to the chord of the CD, over an extended line of the tangent point C and the diameter AB at point P, coupled PD.?#%#(1) Proof: PD ? $ ⊙O $ is tangent;% # # (2) Proof: $ {{PD} ^ {2}} =PB \ cdot PA $; #% # (3) if $ PD =4 $, $ \? tan \ angle CDB =\ frac {1} {2} $, length AB required diameter.

graph:
{"stem":{"pictures":[{"picturename":"1000025078.jpg","coordinates":{"A":"-3.00,0.00","B":"3.00,0.00","C":"1.80,-2.40","D":"1.80,2.40","P":"5.00,0.00","O":"0.00,0.00"},"collineations":{"0":"A###O###P###B","1":"A###D","2":"B###D","3":"P###D","4":"D###C","5":"C###P"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"A###D###B###C"}]}],"appliedproblems":{}},"substems":[]}

NLP: DiameterRelation{diameter=AB, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, length=null},LinePerpRelation{line1=AB, line2=CD, crossPoint=},SegmentRelation:PD,PointOnLineRelation{point=C, line=PC, isConstant=false, extension=false},LineCrossRelation [crossPoint=Optional.of(P), iLine1=AB, iLine2=PC],EqualityRelation{AB=v_1},EqualityRelation{DP=4},EqualityRelation{tan(∠BDC)=(1/2)},ProveConclusionRelation:[Proof: LineContactCircleRelation{line=PD, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, contactPoint=Optional.of(D), outpoint=Optional.of(P)}],ProveConclusionRelation:[Proof: EqualityRelation{((DP)^2)=BP*AP}]

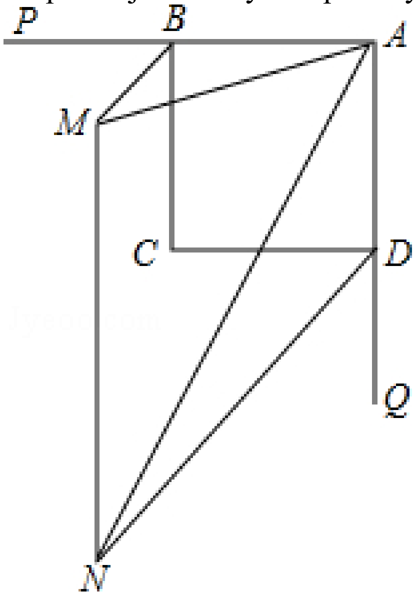
403, topic: FIG, CE is ⊙O diameter, cut ⊙O BD at point D, DE∥BO, CE BD extension lines cross at point A #% # (1) Proof: the straight line BC is ⊙O tangent;% # # (2) when AE =2, $ \ tan \ angle DEO =\ sqrt {2} $ long, seeking the AO #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000080992_Q_1.jpg","coordinates":{"A":"-6.27,5.42","B":"-8.92,-2.64","C":"-6.09,-2.58","D":"-8.04,0.05","E":"-6.18,1.42","O":"-6.14,-0.58"},"collineations":{"0":"A###E###O###C","1":"A###D###B","2":"E###D","3":"B###C","4":"B###O"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"E###D###C"}]}],"appliedproblems":{}},"substems":[]}

NLP: DiameterRelation{diameter=CE, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, length=null},LineContactCircleRelation{line=BD, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, contactPoint=Optional.of(D), outpoint=Optional.of(B)},LineParallelRelation [iLine1=DE, iLine2=BO],LineCrossRelation [crossPoint=Optional.of(A), iLine1=CE, iLine2=BD],EqualityRelation{AO=v_0},EqualityRelation{AE=2},EqualityRelation{tan(∠DEO)=(2^(1/2))},Calculation:(ExpressRelation:[key:]v_0),ProveConclusionRelation:[Proof: LineContactCircleRelation{line=BC, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, contactPoint=Optional.of(C), outpoint=Optional.of(B)}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]AO)}

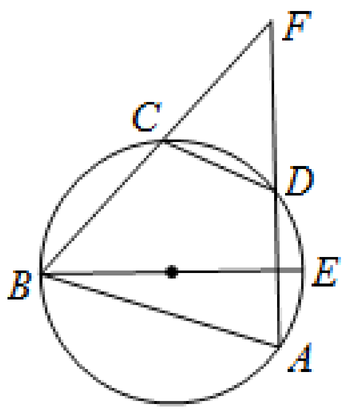
404, topic: Known: FIG square ABCD, BM, DN, respectively, bisecting the square two outer corners, and satisfies $ \ angle MAN =45 ^ \ circ $, coupling MN (1) if the square of a side length , seeking $ BM \ cdot DN $ value of #% # (2) in terms of BM, DN, MN is surrounded by three sides of a triangle, triangle shape conjecture try and prove your conclusions.



graph:
{"stem":{"pictures":[{"picturename":"1000010830_Q_1.jpg","coordinates":{"A":"15.00,5.00","B":"10.00,5.00","C":"10.00,0.00","D":"15.00,0.00","M":"8.19,3.19","N":"8.19,-6.74","P":"6.00,5.00","Q":"15.00,-4.00"},"collineations":{"0":"B###P###A","1":"B###M","2":"D###Q###A","3":"A###M","4":"N###M","5":"C###D","6":"A###N","7":"D###N","8":"C###B"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[{"substemid":"1","questionrelies":"2","pictures":[],"appliedproblems":{}},{"substemid":"2","questionrelies":"1","pictures":[],"appliedproblems":{}}]}

NLP: SquareRelation{square=Square:ABCD},EqualityRelation{∠MAN=(1/4*Pi)},SegmentRelation:MN,SquareRelation{square=Square:ABCD, length=a},Calculation:(ExpressRelation:[key:]BM*DN),SegmentRelation:BM,SegmentRelation:DN,SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]BM*DN)}

405, topic: As shown, it is known within the quadrangle ABCD is a quadrilateral circle, EB is the diameter of ⊙O, $ \ widehat {EA} =\ widehat {DE} $, AD and BC extension lines intersect at F., Proof: $ AB \ cdot DC =FD \ cdot BC $ #% # <img>.

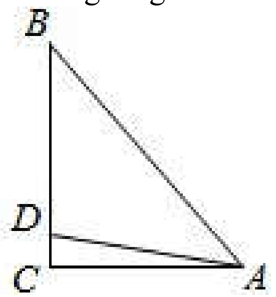


graph:
{"stem":{"pictures":[{"picturename":"1000060807_Q_1.jpg","coordinates":{"A":"7.73,5.00","B":"4.00,6.00

","C":"5.81,7.99","D":"7.73,7.00","E":"8.00,6.00","F":"7.73,10.10","O":"6.00,6.00"},"collineations":{"0":"A###B","1":"B###C###F","2":"F###D###A","3":"B###O###E","4":"B###D","5":"D###C"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"A###E###D###C###B"}]}],"appliedproblems":{}},"substems":[]}

NLP: InscribedShapeOfCircleRelation{closedShape=ABCD, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}},DiameterRelation{diameter=EB, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, length=null},EqualityRelation{⌒AE=⌒DE},LineCrossRelation[crossPoint=Optional.of(F), iLine1=AD, iLine2=BC],ProveConclusionRelation:[Proof: EqualityRelation{AB*CD=DF*BC}]

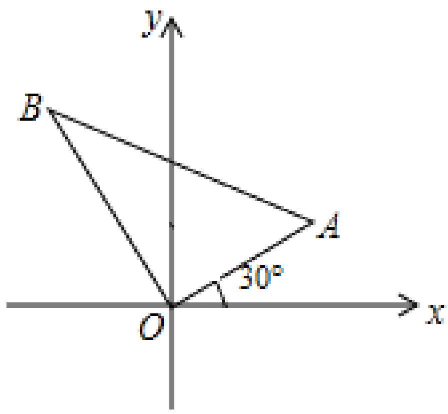
406, topic: FIG at $ Rt △ABC $ is known $ ∠C =90 ° $, $ ∠CAD =∠BAD $, $ DC =3 $, $ BD =5 $, AC seeking long.



graph: {"stem":{"pictures":[{"picturename":"1000006716_Q_1.jpg","coordinates":{"A":"1.00,0.00","B":"-5.00,8.00","C":"-5.00,0.00","D":"-5.00,3.00"},"collineations":{"1":"B###C###D","2":"A###C","3":"A###B","4":"A###D"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: EqualityRelation{AC=v_0},RightTriangleRelation:RightTriangle:△ABC[Optional.of(C)],EqualityRelation{∠ACD=(1/2*Pi)},EqualityRelation{∠CAD=∠BAD},EqualityRelation{CD=3},EqualityRelation{BD=5},Calculation:(ExpressRelation:[key:]v_0),SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]AC)}

407, topic: FIG, Rt △ABO vertex at the origin, OA =12, AB =20, ∠AOx =30 °, find A, B coordinates of the two points, and determining the area of ABO is △#% # <img. >



graph: {"stem":{"pictures":[{"picturename":"1000082388_Q_1.jpg","coordinates":{"A":"5.20,3.00","B":"-4.00,6.93","O":"0.00,0.00"},"collineations":{"0":"A###B","1":"A###O","2":"B###O"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: EqualityRelation {S_ △ABO =v_0}, EqualityRelation {AO =12}, EqualityRelation {AB =20}, EqualityRelation {∠AO * x =(1/6 * Pi)}, the coordinates PointRelation: A, coordinates PointRelation: B , find the value (size) :(ExpressRelation: [key:] v_0), SolutionConclusionRelation {relation =coordinates PointRelation: A}, SolutionConclusionRelation {relation =coordinates PointRelation: B}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] S_ △ABO)}

408, topic: 1, O is the square ABCD intersection of two diagonal lines, respectively, extend to point OD G, OC point E, so OG =2OD, OE =2OC, then OG, OE is adjacent sides for OEFG squares, connected AG, DE #% # (1) Prove:. DE⊥AG; #% # (2) square ABCD is fixed, the rotation OEFG square angle [alpha] ($ 0 ° <α <360 ° counterclockwise about point O $) to give a square OE'F'G ', FIG. 2, during rotation, when ∠OAG' is a right angle, [alpha] $ $ required degree. #% # <img>

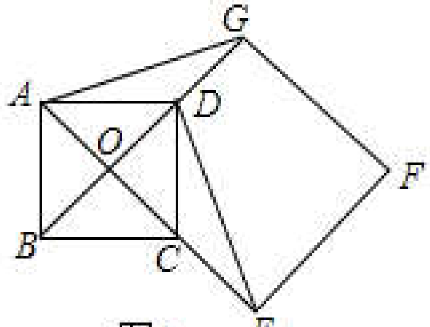


图1

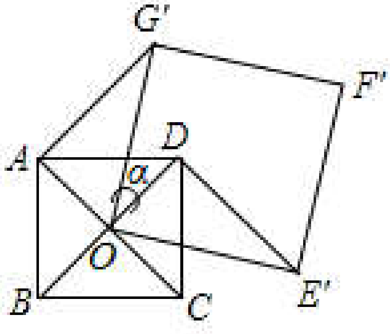
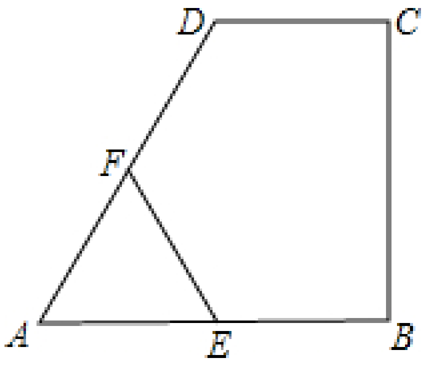


图2

graph:
{"stem":{"pictures":[{"picturename":"1000061933_Q_1.jpg","coordinates":{"A":"0.00,4.00","B":"0.00,0.00","C":"4.00,0.00","D":"4.00,4.00","E":"6.00,-2.00","F":"10.00,2.00","G":"6.00,6.00","O":"2.00,2.00"},"collineations":{"0":"A###B","1":"B###C","2":"A###G","3":"A###D","4":"D###E","5":"G###F","6":"F###E","7":"D###C","8":"A###O###C###E","9":"B###O###D###G"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[{"substemid":"2","questionrelies":"","pictures":[{"picturename":"1000061933_Q_1.jpg","coordinates":{"A":"12.00,4.00","B":"12.00,0.00","C":"16.00,0.00","D":"16.00,4.00","E'":"19.46,0.54","F'":"20.93,6.00","G'":"15.46,7.46","O":"14.00,2.00"},"collineations":{"0":"A###B","1":"B###C","2":"A###G'","3":"A###D","4":"D###E'","5":"G'###F'","6":"F'###E'","7":"D###C","8":"O###G'","9":"O###E'","10":"A###O###C","11":"B###O###D"},"variable-equals":{"0":"∠α=∠DOG'"},"circles":[]}],"appliedproblems":{}}]}

NLP: SquareRelation{square=Square:ABCDintersection : O},PointOnLineRelation{point=E, line=OC, isConstant=false, extension=false},EqualityRelation{GO=2*DO},EqualityRelation{EO=2*CO},SquareRelation{square=Square:EFGO},SegmentRelation:AG,SegmentRelation:DE,ThreeItemsInequalityRelation{multiExpressCompare:(0*Pi)<α<(2*Pi)},SquareRelation{square=Square:ABCD},Calculation:(ExpressRelation:[key:]α),ProveConclusionRelation:[Proof: LinePerpRelation{line1=DE, line2=AG, crossPoint=}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]α)}

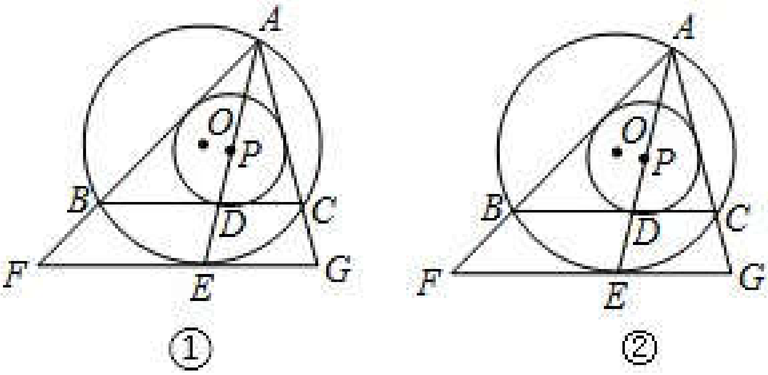
409, topic: As shown, the quadrilateral ABCD, DC∥AB, CB⊥AB, AB =AD, $ CD =\ frac {1} {2} AB $, points E, F, respectively AB, the midpoint of AD , △AEF seek area ratio of the polygonal BCDFE. #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000036751_Q_1.jpg","coordinates":{"A":"0.00,0.00","B":"4.00,0.00","C":"4.00,3.00","D":"2.00,3.00","E":"2.00,0.00","F":"1.00,1.50"},"collineations":{"0":"A###E###B","1":"A###F###D","2":"C###D","3":"C###B","4":"E###F"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: Know:QuadrilateralRelation{quadrilateral=ABCD},LineParallelRelation [iLine1=DC, iLine2=AB],LinePerpRelation{line1=CB, line2=AB, crossPoint=B},EqualityRelation{AB=AD},EqualityRelation{CD=(1/2)*AB},MiddlePointOfSegmentRelation{middlePoint=E,segment=AB},MiddlePointOfSegmentRelation{middlePoint=F,segment=AD}

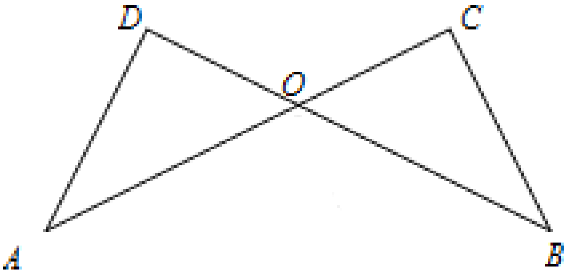
410, topic: FIG ① , connected to the $ ⊙ O $ $ △ABC $, the point P is within the inscribed circle of center $ △ABC $, AP side BC in cross-points D, $ ⊙O $ cross at point E , as a passing point E the tangent $ ⊙O $ are cross-AB, AC extended line at point F, G #% # (1) Prove:.? $ BC // FG $; #% # (2) Research:? PE and the relationship between the DE and AE;? #% # (3) in FIG ① when the $ FE =AB $, as shown in ② , if $ FB =3 $, $ CG =2 $, long seeking AG <. img>



graph:
{"stem":{"pictures":[{"picturename":"1000008296_Q_1.jpg","coordinates":{"A":"0.00,3.74","B":"-3.00,1.51","C":"1.11,1.51","D":"-0.53,1.54","E":"-0.95,-0.21","F":"-5.31,-0.20","G":"1.97,-0.22","O":"-0.95,1.88","P":"-0.32,2.40"},"collineations":{"0":"F###A###B","1":"G###C###A","2":"B###C###D","3":"G###F###E","4":"A###P###D###E"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"A###B###C###E"}]}],"appliedproblems":{}},"substems":[]}

NLP: CircumscribedShapeOfCircleRelation:△ABC/Circle[⊙O_1]{center=O_1, analytic=(x-x_O_1)^2+(y-y_O_1)^2=r_O_1^2}Points:[],InscribedShapeOfCircleRelation{closedShape=△ABC, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}},LineCrossRelation [crossPoint=Optional.of(D), iLine1=AP, iLine2=BC],LineCrossCircleRelation{line=AP, circle=⊙O, crossPoints=[E], crossPointNum=1},PointRelation:G,Calculation:(ExpressRelation:[key:](EP/DE)),Calculation:(ExpressRela tion:[key:](DE/AE)),EqualityRelation{AG=v_2},EqualityRelation{BF=3},EqualityRelation{CG=2},Calculation:(ExpressRelation:[key:]v_2),ProveConclusionRelation:[Proof: LineParallelRelation [iLine1=BC, iLine2=FG]],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:](EP/DE))},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:](DE/AE))},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]AG)}

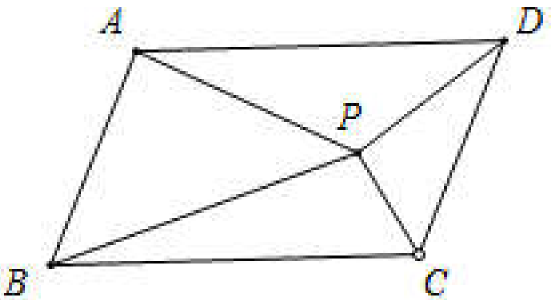
411, topic: FIG, AD =BC, AC =BD, the test described ∠DAO =∠CBO #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000035458_Q_1.jpg","coordinates":{"A":"0.00,0.00","B":"5.00,0.00","C":"4.00,2.00","D":"1.00,2.00","O":"2.50,1.25"},"collineations":{"0":"O###A###C","1":"B###O###D","2":"C###B","3":"A###D"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: EqualityRelation{AD=BC},EqualityRelation{AC=BD},ProveConclusionRelation:[Proof: EqualityRelation{∠DAO=∠CBO}]

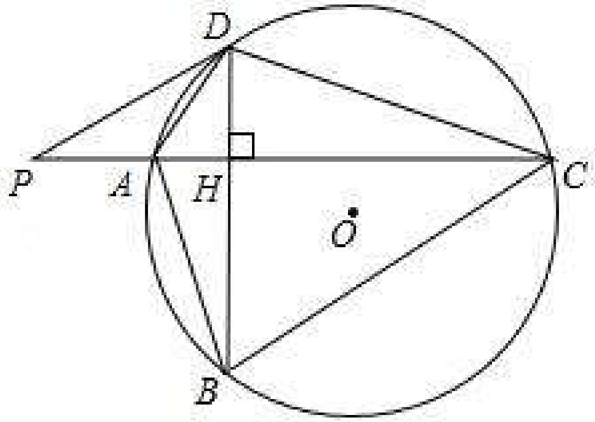
412, topic: P is located inside parallelogram ABCD $ $ point and $ \ angle PBA =\ angle PDA $, Proof: $ \ angle PAB =\ angle PCB $



graph:
{"stem":{"pictures":[{"picturename":"1000011150_Q_1.jpg","coordinates":{"A":"-4.00,7.00","B":"-5.00,0.00","C":"5.00,0.00","D":"6.00,7.00","P":"4.00,3.00"},"collineations":{"0":"B###C","1":"C###D","2":"A###D","3":"B###A","4":"D###P","5":"C###P","6":"B###P","7":"A###P"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: PositionOfPoint2RegionRelation{point=P, region=EnclosedRegionRelation{name=ABCD, closedShape=Parallelogram:ABCD}, position=inner},EqualityRelation{∠ABP=∠ADP},ProveConclusionRelation:[Proof: EqualityRelation{∠BAP=∠BCP}]

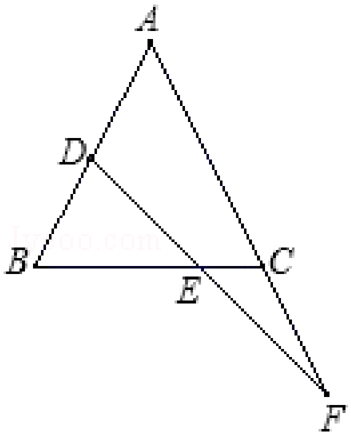
413, topic: FIG, $ ⊙O $ radius $ r =25 $, $ within the quadrilateral ABCD connected to $ $ ⊙O $, $ AC⊥BD $ at point H, P is the CA that the extension line, and .? $ ∠PDA =∠ABD $ #% # (1) is determined again and $ ⊙O $ PD positional relationship, and the reasons;? #% # (2) when the $ \ tan \ angle ADB =\ frac {3 } {4} $, $ PA =\ frac {4 \ sqrt {3} -3} {3} AH $, BD request length;? #% # (3) under the condition (2), a quadrangular seeking $ ABCD $ area.



graph:
{"stem":{"pictures":[{"picturename":"1000026292_Q_1.jpg","coordinates":{"A":"-4.86,1.17","B":"-2.50,-4.33","C":"4.86,1.17","D":"-2.50,4.33","P":"-7.96,1.17","H":"-2.50,1.17","O":"0.00,0.00"},"collineations":{"0":"P###D","1":"D###B###H","2":"P###H###A###C","3":"D###C","4":"A###D","5":"A###B","6":"C###B"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"B###C###D###A"}]}],"appliedproblems":{}},"substems":[]}

NLP: RadiusRelation{radius=null, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, length=Express:[25]},InscribedShapeOfCircleRelation{closedShape=ABCD, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}},LinePerpRelation{line1=AC, line2=BD, crossPoint=H},PointOnLineRelation{point=P, line=CA, isConstant=false, extension=true},EqualityRelation{∠ADP=∠ABH},EqualityRelation{BD=v_0},EqualityRelation{tan(∠ADH)=(3/4)},EqualityRelation{AP=((4*(3^(1/2))-3)/3)*AH},Calculation:(ExpressRelation:[key:]v_0),Know:QuadrilateralRelation{quadrilateral=ABCD},EqualityRelation{S_ABCD=v_1},Calculation:(ExpressRelation:[key:]v_1),JudgePostionConclusionRelation: [data1=PD, data2=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]BD)},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]S_ABCD)}

414, topic: As shown in the △ABC, AB =AC, D, E are the points on the AB and BC, the connection with the extension of DE and an extension line AC at point F. If DE =EF, Proof: BD =CF. #% # <img>

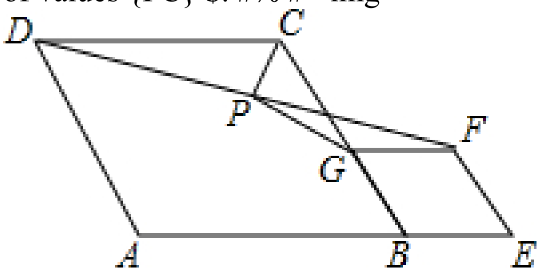


graph:
{"stem":{"pictures":[{"picturename":"1000031148_Q_1.jpg","coordinates":{"A":"-8.00,6.00","B":"-10.00,3.00","C":"-6.00,3.00","D":"-8.94,4.59","E":"-6.95,3.00","F":"-4.97,1.43"},"collineations":{"0":"A###D###B","1":"A###C###F","2":"D###E###F","3":"B###E###C"},"variable-equals":{},"circles":[]}],"appliedprob

lems":{}},"substems":[]}

NLP: TriangleRelation:△ABC,EqualityRelation{AB=AC},PointOnLineRelation{point=D, line=AB, isConstant=false, extension=false},PointOnLineRelation{point=E, line=BC, isConstant=false, extension=false},LineCrossRelation [crossPoint=Optional.of(F), iLine1=DE, iLine2=AC],EqualityRelation{DE=EF},ProveConclusionRelation:[Proof: EqualityRelation{BD=CF}]

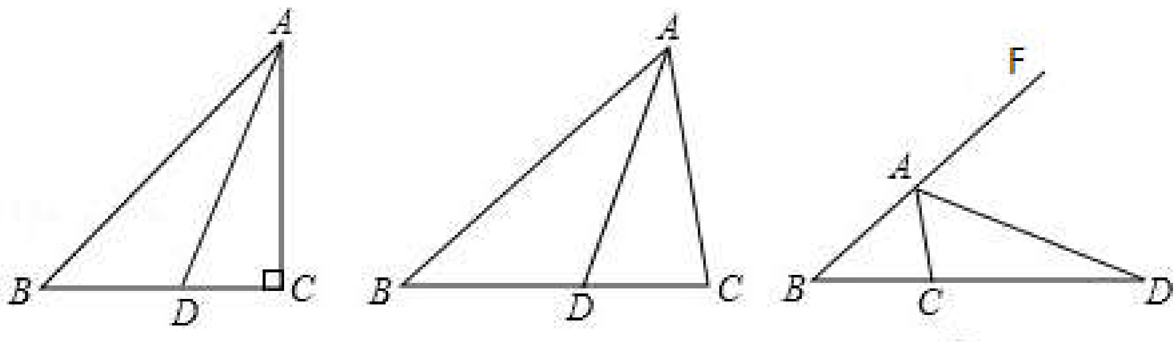
415, topic: FIG, at diamond, and diamond BEFG ABCD, the points A, B, E on the same straight line, the point P is the midpoint of a line segment DF connected PG, PC if ∠ABC =60 °, seeking $ \. frac {PG} of values {PC} $. #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000036602_Q_1.jpg","coordinates":{"A":"0.00,0.00","B":"8.00,0.00","C":"4.00,6.93","D":"-4.00,6.93","E":"12.00,0.00","F":"10.00,3.46","G":"6.00,3.46","P":"3.00,5.20"},"collineations":{"0":"B###G###C","1":"C###D","2":"D###A","3":"A###B###E","4":"E###F","5":"F###G","6":"G###P","7":"P###C","8":"D###P###F"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: RhombusRelation{rhombus=Rhombus:ABCD},RhombusRelation{rhombus=Rhombus:BEFG},MiddlePointOfSegmentRelation{middlePoint=P,segment=DF},SegmentRelation:PG,SegmentRelation:PC,EqualityRelation{∠ ABG=(1/3*Pi)},Calculation:(ExpressRelation:[key:]((GP)/(CP))),SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]((GP)/(CP)))}

416, topic: in the △ABC, ∠ACB =2∠B #% # (1) in FIG ① , when ∠C =90 °, AD is the bisector ∠ BAC, Proof: . AB =AC + CD # % # (2) Figure ② , when ∠C ≠ 90 °, AD is ∠BAC bisector, the line segment AB, AC, how about the need to prove the relationship between the number of CD, please write directly to your guess?; #% # (3) Figure ③ , △ABC when AD is the exterior angle bisector of the line segment AB, AC, what kind of relationship between the number of CD have? Please write your guess, and give proof of your conjecture. #% # <Img>



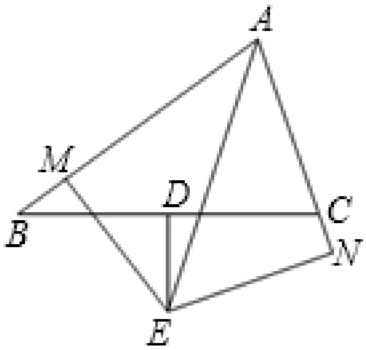
① ② ③

graph:

{"stem":{"pictures":[],"appliedproblems":{}},"substems":[{"substemid":"1","questionrelies":"1","pictures":[{"picturename":"1000027251_Q_1.jpg","coordinates":{"A":"4.00,5.00","B":"0.00,0.00","C":"4.00,0.00","D":"2.25,0.00"},"collineations":{"0":"C###D###B","1":"A###C","2":"A###B","3":"D###A"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},{"substemid":"2","questionrelies":"2","pictures":[{"picturename":"1000027251_Q_2.jpg","coordinates":{"A":"4.00,4.00","B":"0.00,0.00","C":"6.00,0.00","D":"3.36,0.00"},"collineations":{"0":"C###D###B","1":"A###B","2":"D###A","3":"A###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},{"substemid":"3","questionrelies":"3","pictures":[{"picturename":"1000027251_Q_3.jpg","coordinates":{"A":"2.00,1.00","B":"0.00,0.00","C":"2.47,0.00","D":"4.89,0.00","E":"3.00,1.50"},"collineations":{"0":"C###D###B","1":"A###B###E","2":"D###A","3":"A###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}}]}

NLP: TriangleRelation: △ABC, EqualityRelation {∠ACD =2 * ∠ABD}, EqualityRelation {∠ACD =(1/2 * Pi)}, AngleBisectorRelation {line =AD, angle =∠BAC, angle1 =∠BAD, angle2 =∠CAD}, AngleBisectorRelation {line =AD, angle =∠BAC, angle1 =∠BAD, angle2 =∠CAD}, evaluation (size) :(ExpressRelation: [key:] (AB / AC)), evaluation (size) :(ExpressRelation: [key:] (AC / CD)), evaluation (size) :(ExpressRelation: [key:] (AB / AC)), evaluation (size) :(ExpressRelation: [key:] (AC / CD)), ProveConclusionRelation: [Proof: EqualityRelation {AB =AC + CD}], SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] (AB / AC))}, SolutionConclusionRelation {relation =evaluation (size) :(ExpressRelation: [key:] (AC / CD))}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] (AB / AC))}, SolutionConclusionRelation {relation =evaluation (size) :(ExpressRelation: [key:] (AC / CD))}

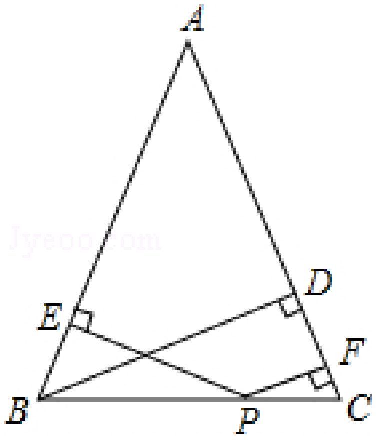
417, topic: FIG, BD =DC, DE⊥BC, cross ∠BAC bisector at point E, EM⊥AB, EN⊥AC, pedal respectively M, N Proof:. BM =CN #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000072674_Q_1.jpg","coordinates":{"A":"4.00,3.00","B":"0.00,0.00","C":"5.00,0.00","D":"2.50,0.00","E":"2.50,-1.80","M":"0.74,0.55","N":"5.29,-0.87"},"collineations":{"0":"A###M###B","1":"A###E","2":"A###C###N","3":"B###D###C","4":"E###M","5":"E###D","6":"E###N"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: AngleBisectorRelation{line=AE,angle=∠CAM, angle1=∠CAE, angle2=∠EAM},EqualityRelation{BD=CD},LinePerpRelation{line1=DE, line2=BC, crossPoint=D},LinePerpRelation{line1=EM, line2=AB, crossPoint=M},LinePerpRelation{line1=EN, line2=AC, crossPoint=N},ProveConclusionRelation:[Proof: EqualityRelation{BM=CN}]

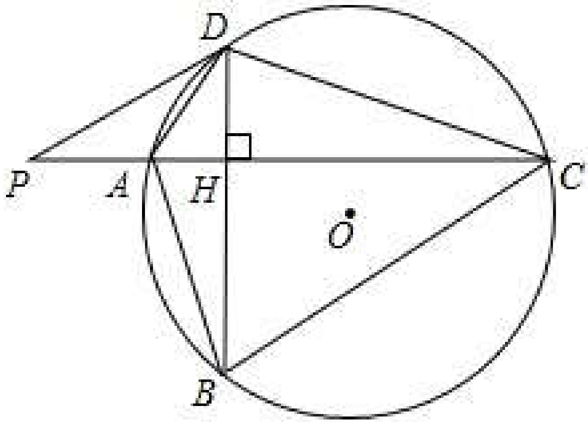
418, topic: Given: As shown, the isosceles triangle ABC, AB =AC, P is an arbitrary point on the bottom edge of the BC, through the point P as PE⊥AB, PF⊥AC, pedal respectively E, F, through point B as BD⊥AC, D. pedal is again described:. PE + PF =BD #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000029258_Q_1.jpg","coordinates":{"A":"2.00,5.00","B":"0.00,0.00","C":"4.00,0.00","D":"3.45,1.38","E":"0.41,1.03","F":"3.86,0.34","P":"3.00,0.00"},"collineations":{"0":"A###B###E","1":"B###P###C","2":"A###D###F###C","3":"E###P","4":"P###F","5":"B###D"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP:
IsoscelesTriangleRelation:IsoscelesTriangle:△ABC[Optional.of(A)],EqualityRelation{AB=AC},LinePerpRelation{line1=PE, line2=AB, crossPoint=E},LinePerpRelation{line1=PF, line2=AC, crossPoint=F},LinePerpRelation{line1=BD, line2=AC, crossPoint=D},ProveConclusionRelation:[Proof: EqualityRelation{EP+FP=BD}]

419, topic: FIG, $ ⊙O $ radius $ r =25 $, within the quadrilateral ABCD connected to the round $ ⊙O $, $ AC⊥BD $ at point H, P is the CA that the extension line, and $ ∠PDA =∠ABD $. ?% # # (1) test determines the positional relationship between PD and $ ⊙O $ of reasons;? #% # (2) When the $ \ tan∠ ADB =\ frac {3} {4} $, $ {{ PA}} =\ frac {{4 \ sqrt 3 - 3}} {3} AH $, seeking BD long; at #% # (3) condition (2), find the quadrilateral $ ABCD $ area?. <Img>

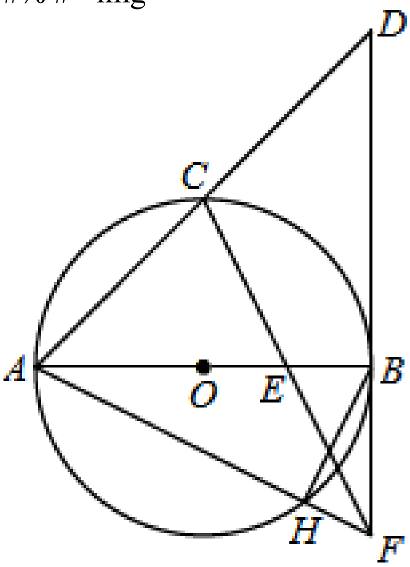


graph:
{"stem":{"pictures":[{"picturename":"1000008339_Q_1.jpg","coordinates":{"A":"-4.87,1.01","B":"-3.00,-3.97","C":"4.88,0.98","D":"-2.98,3.98","P":"-6.99,0.97","H":"-2.99,1.00","O":"0.00,0.00"},"collineations":{"0":"P###A###H###C","1":"D###H###B","2":"D###C","3":"A###D","4":"A###B","5":"C###B","6":"P###D"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"A###D###C###B"}]}],"appliedproblems":{}},"substems":[]}

NLP: RadiusRelation{radius=null, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, length=Express:[25]},InscribedShapeOfCircleRelation{closedShape=ABCD, circle=Circle[⊙O]{center=O,

analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}},LinePerpRelation{line1=AC, line2=BD, crossPoint=H},PointOnLineRelation{point=P, line=CA, isConstant=false, extension=true},EqualityRelation{∠ADP=∠ABH},EqualityRelation{BD=v_0},EqualityRelation{tan(∠ADH)=(3/4)},EqualityRelation{(AP)=(((4*(3^(1/2))-3))/3)*AH},Calculation:(ExpressRelation:[key:]v_0),Know:QuadrilateralRelation{quadrilateral=ABCD},EqualityRelation{S_ABCD=v_1},Calculation:(ExpressRelation:[key:]v_1),JudgePostionConclusionRelation: [data1=PD, data2=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]BD)},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]S_ABCD)}

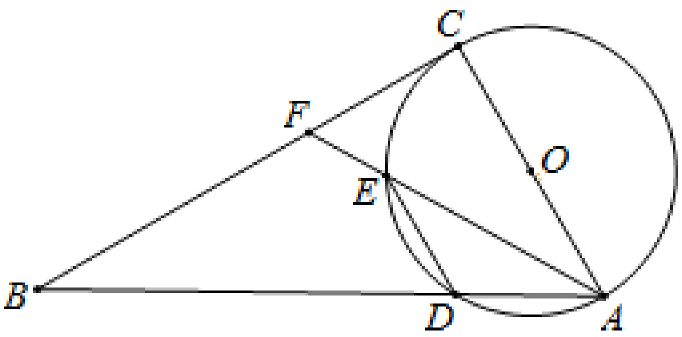
420, topic: FIG, AB is $ \ odot O $ diameter, C is $ \ widehat {AB} $ midpoint, $ \ odot O $ tangent AC BD extension lines cross at point D, E is OB midpoint, CE BD tangent extension lines cross at point F, AF pay $ \ odot O $ at point H, is connected BH #% # (1) Prove:. AC =CD; #% # (2) if OB =2, BH seeking long. #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000060760_Q_1.jpg","coordinates":{"A":"-2.00,0.00","B":"2.00,0.00","C":"0.00,2.00","D":"2.01,4.00","E":"1.00,0.00","F":"2.01,-2.01","H":"1.20,-1.60","O":"0.00,0.00"},"collineations":{"0":"A###C###D","1":"A###H###F","2":"D###B###F","3":"C###E###F","4":"H###B","5":"A###O###E###B"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"A###C###H###B"}]}],"appliedproblems":{}},"substems":[]}

NLP: LineContactCircleRelation{line=BD, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, contactPoint=Optional.of(B), outpoint=Optional.of(D)},DiameterRelation{diameter=AB, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, length=null},MiddlePointOfArcRelation:C/type:MAJOR_ARC⌒AB,LineCrossRelation [crossPoint=Optional.of(D), iLine1=BD, iLine2=AC],MiddlePointOfSegmentRelation{middlePoint=E,segment=OB},LineCrossRelation [crossPoint=Optional.of(F), iLine1=CE, iLine2=BD],LineCrossCircleRelation{line=AF, circle=⊙O, crossPoints=[H], crossPointNum=1},SegmentRelation:BH,EqualityRelation{BH=v_0},EqualityRelation{BO=2},Calculation:(ExpressRelation:[key:]v_0),ProveConclusionRelation:[Proof: EqualityRelation{AC=CD}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]BH)}

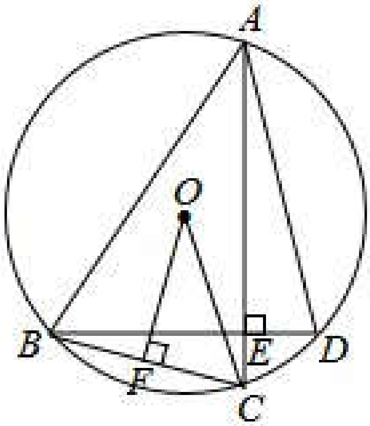
421, topic: as shown, with the side AC Rt △ABC is the diameter of the cross ⊙ O hypotenuse AB at points D, point F to point BC on, the AF cross ⊙ O at points E, and DE∥AC #% #. (1) Proof: ∠CAF =∠B #% # (2) If the radius is ⊙ O 4, AE =2AD, long seeking DE #% # <img>..



graph:
{"stem":{"pictures":[{"picturename":"1000052509_Q_1.jpg","coordinates":{"A":"1.03,-1.68","B":"-6.67,-1.75","C":"-1.09,1.73","D":"-1.06,-1.70","E":"-2.03,-0.14","F":"-3.17,0.43","O":"-0.03,0.02"},"collineations":{"0":"A###D###B","1":"A###O###C","2":"C###F###B","3":"A###E###F","4":"D###E"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"A###D###E###C"}]}],"appliedproblems":{}},"substems":[]}

NLP: RightTriangleRelation:RightTriangle:△ABC[Optional.of(C)],LineCrossCircleRelation{line=AB, circle=⊙O, crossPoints=[D], crossPointNum=1},DiameterRelation{diameter=AC, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, length=null},PointOnLineRelation{point=F, line=BC, isConstant=false, extension=false},LineCrossCircleRelation{line=AF, circle=⊙O, crossPoints=[E], crossPointNum=1},LineParallelRelation [iLine1=DE, iLine2=AC],EqualityRelation{DE=v_0},RadiusRelation{radius=null, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, length=Express:[4]},EqualityRelation{AE=2*AD},Calculation:(ExpressRelation:[key:]v_0),ProveConclusionRelation:[Proof: EqualityRelation{∠EAO=∠DBF}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]DE)}

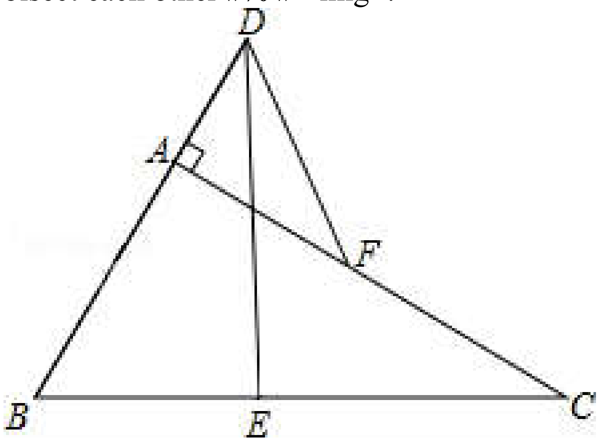
422, topic: FIG, points A, B, C, D in the $ ⊙O $, $ AC⊥BD $ to point E, over the point O to be $ OF ⊥BC $ F., Prove:?% # # (1) $ △AEB∽ △OFC $;? #% # (2) $ AD =2FO $.



graph:
{"stem":{"pictures":[{"picturename":"1000008182_Q_1.jpg","coordinates":{"A":"2.02,5.65","B":"-4.41,-4.07","C":"2.02,-5.65","D":"4.41,-4.07","E":"2.02,-4.07","F":"-1.19,-4.86","O":"0.00,0.00"},"collineations":{"0":"B###A","1":"A###D","2":"B###C###F","3":"C###A###E","4":"O###F","5":"O###C","6":"E###D###B"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"A###B###C###D"}]}],"appliedproblems":{}},"substems":[]}

NLP: PointOnCircleRelation{circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, points=[A, B, C, D]},LinePerpRelation{line1=AC, line2=BD, crossPoint=E},LinePerpRelation{line1=OF, line2=BC, crossPoint=F},ProveConclusionRelation:[Proof:　TriangleSimilarRelation{triangleA=△AEB, triangleB=△OFC}],ProveConclusionRelation:[Proof:　EqualityRelation{AD=2*FO}]

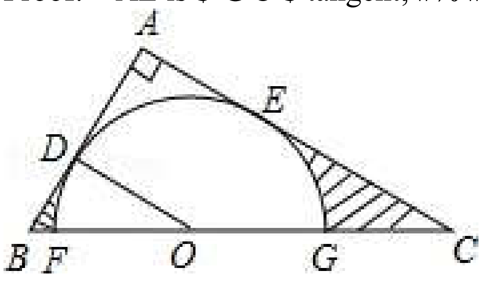
423, topic: As shown in the Rt △ABC, ∠BAC =90 °, E, F, respectively, is the midpoint of BC, AC and BA to extend the point D, so that $ AD =\ frac {1} {2} AB $, DE connection, verify the DF:. AF and DE bisect each other #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000031962_Q_1.jpg","coordinates":{"A":"-12.00,5.00","B":"-13.20,2.00","C":"-4.50,2.00","D":"-11.40,6.50","E":"-8.85,2.00","F":"-8.25,3.50"},"collineations":{"0":"D###A###B","1":"A###F###C","2":"B###E###C","3":"D###F","4":"D###E"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: RightTriangleRelation:RightTriangle:△ABC[Optional.of(A)],EqualityRelation{∠BAF=(1/2*Pi)},MiddlePointOfSegmentRelation{middlePoint=E,segment=BC},MiddlePointOfSegmentRelation{middlePoint=F,segment=AC},PointOnLineRelation{point=D, line=BA, isConstant=false, extension=true},EqualityRelation{AD=(1/2)*AB},SegmentRelation:DE,SegmentRelation:DF,ProveConclusionRelation:[LineDecileSegmentRelation [iLine1=AF, iLine2=DE, crossPoint=Optional.absent()]],ProveConclusionRelation:[LineDecileSegmentRelation [iLine1=DE, iLine2=AF, crossPoint=Optional.absent()]]

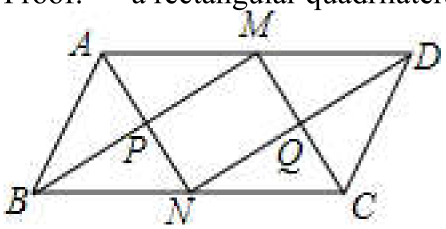
424, topic: As shown in the $ Rt △ABC $, $ ∠A =90 ° $, O BC is the edge point to the center O of the semicircular edge AB tangent to points D, and AC, BC side respectively, at point E, F, G, is connected OD, known $ BD =2 $, $ AE =3 $, $ \ tan∠BOD =\ frac {2} {3} $. ??% # # (1) find $ ⊙O $ radius OD; #% # (2) Proof:　AE is $ ⊙O $ tangent; #% # (3) Find the shaded area in FIG portion and two? . <Img>



graph:
{"stem":{"pictures":[{"picturename":"1000008324_Q_1.jpg","coordinates":{"A":"-0.45,4.22","B":"-3.86,0.00","C":"4.77,0.00","D":"-2.33,1.89","E":"1.89,2.33","F":"-3.00,0.00","G":"3.00,0.00","O":"0.00,0.00"},"collineations":{"0":"D###B###A","1":"D###O","2":"E###C###A","3":"B###F###O###G###C"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"E###D###F###G"}]}],"appliedproblems":{}},"substems":[]}

NLP: CircleCenterRelation{point=O, conic=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}},RightTriangleRelation:RightTriangle:△ABC[Optional.of(A)],EqualityRelation{∠DAE=(1/2*Pi)},PointOnLineRelation{point=O, line=BC, isConstant=false, extension=false},LineContactCircleRelation{line=AB, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, contactPoint=Optional.of(D), outpoint=Optional.absent()},SegmentRelation:AB,PointRelation:F,PointRelation:G,SegmentRelation:OD,EqualityRelation{BD=2},EqualityRelation{AE=3},EqualityRelation{tan(∠DOF)=(2/3)},ProveConclusionRelation:[Proof: LineContactCircleRelation{line=AE, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, contactPoint=Optional.of(E), outpoint=Optional.of(A)}]

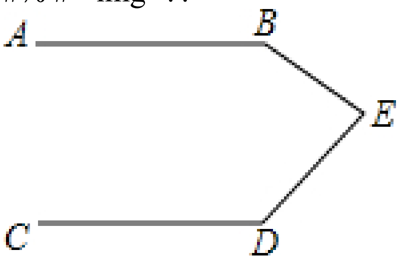
425, topic: As shown in FIG, M, N are the midpoint on the side AD of □ABCD, BC, and AD =2AB, Proof: a rectangular quadrilateral PMQN #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000061891_Q_1.jpg","coordinates":{"A":"6.49,10.61","B":"5.00,8.00","C":"11.00,8.00","D":"12.49,10.61","M":"9.49,10.61","N":"8.00,8.00","P":"7.24,9.30","Q":"10.24,9.30"},"collineations":{"0":"A###B","1":"B###N###C","2":"C###D","3":"D###M###A","4":"A###P###N","5":"N###Q###D","6":"B###P###M","7":"M###Q###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: ParallelogramRelation{parallelogram=Parallelogram:ABCD},MiddlePointOfSegmentRelation{middlePoint=M,segment=AD},MiddlePointOfSegmentRelation{middlePoint=N,segment=BC},EqualityRelation{AD=2*AB},ProveConclusionRelation:[Proof: RectangleRelation{rectangle=Rectangle:PMQN}]

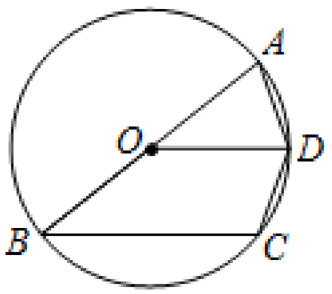
426, topic: figure, known AB∥CD, then ∠B + ∠BED + ∠D equal to the number of degrees Why #% # <img>??



graph:
{"stem":{"pictures":[{"picturename":"41D26106C74E45BABD3364FDEFA6C062.jpg","coordinates":{"A":"-14.00,5.00","B":"-9.00,5.00","C":"-14.00,2.00","D":"-9.00,2.00","E":"-6.00,4.00"},"collineations":{"0":"B###A","1":"C###D","2":"B###E","3":"E###D"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: LineParallelRelation [iLine1 =AB, iLine2 =CD], evaluated (size) :(ExpressRelation: [key:] ∠ABE + ∠BED + ∠CDE), SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] ∠ABE + ∠BED + ∠CDE)}

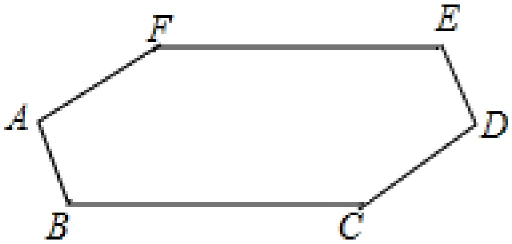
427, topic: FIG, C, D AB is based on two points on the diameter ⊙O and OD // BC Proof:. AD =DC #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000080913_Q_1.jpg","coordinates":{"A":"-3.64,3.40","B":"-9.91,-1.81","C":"-3.64,-1.81","D":"-2.70,0.79","O":"-6.77,0.79"},"collineations":{"0":"B###O###A","1":"O###D","2":"A###D","3":"C###D","4":"B###C"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"A###B###C###D"}]}],"appliedproblems":{}},"substems":[]}

NLP: DiameterRelation{diameter=AB, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, length=null},PointOnCircleRelation{circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, points=[C, D]},LineParallelRelation [iLine1=OD, iLine2=BC],ProveConclusionRelation:[Proof: EqualityRelation{AD=CD}]

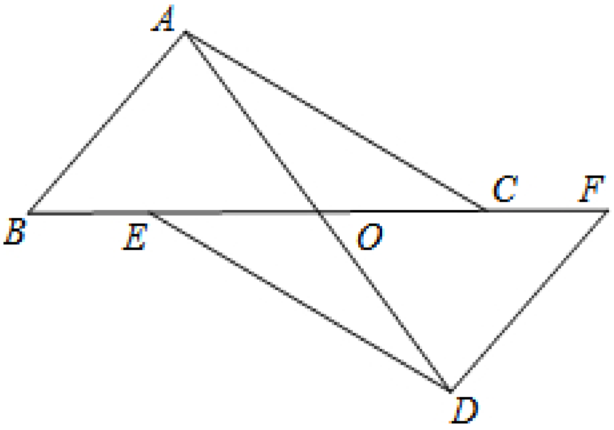
428, topic: Given: FIG, AB =DE, BC =EF, CD =FA, ∠A =∠D Proof: ∠B =∠E #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000030751_Q_1.jpg","coordinates":{"A":"-13.00,4.00","B":"-12.00,2.00","C":"-6.00,2.00","D":"-4.00,4.00","E":"-5.00,6.00","F":"-11.00,6.00"},"collineations":{"0":"A###B","1":"B###C","2":"C###D","3":"D###E","4":"E###F","5":"A###F"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: EqualityRelation{AB=DE},EqualityRelation{BC=EF},EqualityRelation{CD=AF},EqualityRelation{∠BAF=∠CDE},ProveConclusionRelation:[Proof: EqualityRelation{∠ABC=∠DEF}]

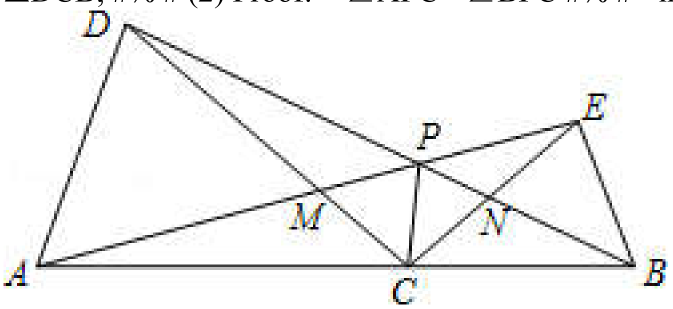
429, topic: Given: FIG, AD, BF intersect at point O, the point E, C in the BF, BE =FC, AC =DE, AB =DF Proof:. OA =OD, OB =OF #% # <img>



graph: {"stem":{"pictures":[{"picturename":"1000061418_Q_1.jpg","coordinates":{"A":"5.00,8.00","B":"3.00,5.00","C":"9.00,5.00","D":"9.00,2.00","E":"5.00,5.00","F":"11.00,5.00","O":"7.00,5.00"},"collineations":{"0":"A###B","1":"B###E###O###C###F","2":"F###D","3":"D###E","4":"A###C","5":"A###O###D"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: LineCrossRelation [crossPoint=Optional.of(O), iLine1=AD, iLine2=BF],PointOnLineRelation{point=E, line=BF, isConstant=false, extension=false},PointOnLineRelation{point=C, line=BF, isConstant=false, extension=false},EqualityRelation{BE=CF},EqualityRelation{AC=DE},EqualityRelation{AB=DF},EqualityRelation{BO=FO},ProveConclusionRelation:[Proof: EqualityRelation{AO=DO}]

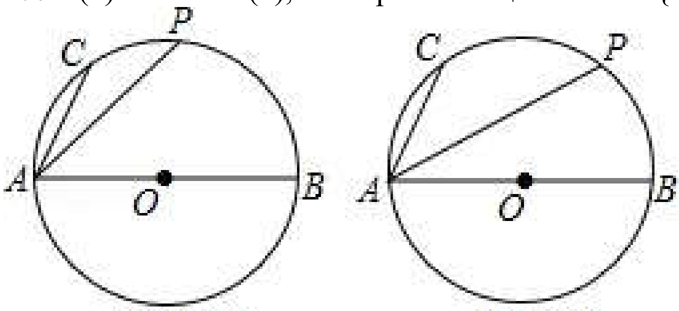
430, topic: As shown, point C is on the line segment AB at any point (not the point A, B overlap) respectively, AC, BC AB as a waist in the same side as isosceles isosceles △ACD and △BCE, CA =CD, CB =CE, ∠ACD with both acute and ∠BCE ∠ACD =∠BCE, cross connection AE CD at point M, is connected to the CE BD cross point N, AE and BD at point P, is connected PC. #% # (1) Proof: △ACE≌△DCB; #% # (2) Proof: ∠APC =∠BPC #% # <img>.



graph: {"stem":{"pictures":[{"picturename":"48543683E4D8491D8721087C3027BEEA.jpg","coordinates":{"A":"-14.00,3.00","B":"-5.00,3.00","C":"-8.00,3.00","D":"-12.91,6.44","E":"-5.54,4.72","M":"-9.35,3.95","N":"-6.85,3.80","P":"-7.87,4.25"},"collineations":{"0":"C###A###B","1":"A###M###P###E","2":"D###A","3":"D###B###P###N","4":"B###E","5":"D###M###C","6":"E###N###C","7":"P###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: PointRelation:A,PointRelation:B,EqualityRelation{AC=CD},EqualityRelation{BC=CE},Know:AcuteAngleRelation:∠ACM/ACUTE_ANGLE,Know:AcuteAngleRelation:∠BCN/ACUTE_ANGLE,EqualityRelation{∠ACM=∠BCN},LineCrossRelation [crossPoint=Optional.of(M), iLine1=AE, iLine2=CD],LineCrossRelation [crossPoint=Optional.of(N), iLine1=BD, iLine2=CE],LineCrossRelation [crossPoint=Optional.of(P), iLine1=AE, iLine2=BD],ProveConclusionRelation:[Proof: TriangleCongRelation{triangleA=△ACE, triangleB=△DCB}],ProveConclusionRelation:[Proof: EqualityRelation{∠CPM=∠CPN}]

431, topic: FIG, AB is the diameter of $ ⊙O $, C, P is $ \ widehat {AB} $ two points, $ AB =13 $, $ AC =5 $. ?% # # (1) shown in (1), if the point P is a $ \ widehat {AB} $ midpoint of the rectification PA;? #% # (2) shown in (2), if the point P is $ \ widehat {BC} $ the midpoint, PA seeking long.

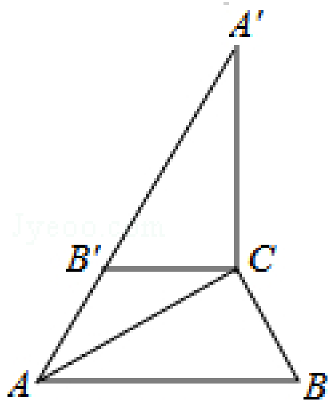


图(1) 图(2)

graph:
{"stem":{"pictures":[{"picturename":"1000024956.jpg","coordinates":{"A":"0.00,0.00","B":"13.00,0.00","C":"1.92,4.62","O":"6.50,0.00"},"collineations":{"0":"B###A###O","1":"C###A"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"C###B###A"}]}],"appliedproblems":{}},"substems":[{"substemid":"1","questionrelies":"","pictures":[{"picturename":"1000024956.jpg","coordinates":{"P":"6.50,6.50"},"collineations":{"0":"A###P"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},{"substemid":"2","questionrelies":"","pictures":[{"picturename":"1000024956.jpg","coordinates":{"P":"9.00,6.00"},"collineations":{"0":"A###P"},"variable-equals":{},"circles":[]}],"appliedproblems":{}}]}

NLP: DiameterRelation{diameter=AB, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, length=null},PointOnArcRelation{point=C, arc=type:MAJOR_ARC⌒AB},PointOnArcRelation{point=P, arc=type:MAJOR_ARC⌒AB},EqualityRelation{AB=13},EqualityRelation{AC=5},EqualityRelation{AP=v_0},MiddlePointOfArcRelation:P/type:MAJOR_ARC⌒AB,Calculation:(ExpressRelation:[key:]v_0),EqualityRelation{AP=v_1},MiddlePointOfArcRelation:P/type:MAJOR_ARC⌒BC,Calculation:(ExpressRelation:[key:]v_1),SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]AP)},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]AP)}

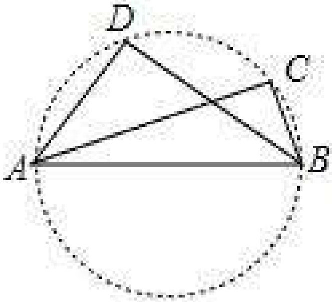
432, topic: As shown in the Rt △ABC, ∠ACB =90 °, ∠B =60 °, BC =2, △A'B'C can be rotated clockwise about the point C is obtained by a △ABC, wherein point A 'and the corresponding point is the point a, point B' and point B is the point corresponding to the connection AB ', and a, B', a 'along the same line, seeking AA' in length. #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000031476_Q_1.jpg","coordinates":{"A":"-11.00,3.00","B":"-7.00,3.00","C":"-8.00,4.73","A'":"-8.00,8.20","B'":"-10.00,4.73"},"collineations":{"0":"A###B","1":"B###B","2":"C###A","3":"B'###C","4":"A'###C","5":"A###A'###B'"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP:
EqualityRelation{AA'=v_1},RightTriangleRelation:RightTriangle:△ABC[Optional.of(C)],EqualityRelation{∠ACB=(1/2*Pi)},EqualityRelation{∠ABB=(1/3*Pi)},EqualityRelation{BC=2},SegmentRelation:AB',PointRelation:A,PointRelation:B',Calculation:(ExpressRelation:[key:]v_1),SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]AA')}

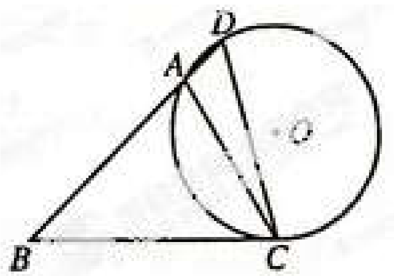
433, topic: FIG, $ △ABC $ and $ △ABD $ are right-angled triangle, and $ ∠C =∠D =90 □ b $ Proof: A, B, C, D four points on the same circle.



graph:
{"stem":{"pictures":[{"picturename":"1000024874_Q_1.jpg","coordinates":{"A":"-10.93,4.18","B":"-0.98,4.07","C":"-1.99,7.13","D":"-9.22,7.13"},"collineations":{"0":"A###B","1":"A###D","2":"A###C","3":"B###D","4":"C###B"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP:
RightTriangleRelation:RightTriangle:△ABC[Optional.of(C)],RightTriangleRelation:RightTriangle:△ABD[Optional.of(D)],PointRelation:B,PointRelation:C

434, topic: As shown in $ \ vartriangle ABC $ in, $ \ angle B =45 ^ \ circ $, $ \ angle ACB =60 ^ \ circ $, $ AB =3 \ sqrt {2} $, $ point BA $ $ D $ is the extension bit line, and $ \ angle D =\ angle ACB $, $ \ odot O $ to $ \ vartriangle ACD $ circumscribed circle (1) find the BC $ $ long;. #% # (2) seeking $ \ odot O $ radius.

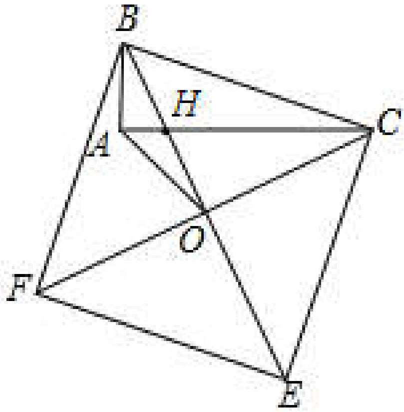


graph:
{"stem":{"pictures":[{"picturename":"1000010402_Q_1.jpg","coordinates":{"A":"0.00,3.00","B":"-3.00,0.00","C":"1.73,0.00","D":"0.73,0.73","O":"1.73,2.00"},"collineations":{"0":"B###A###D","1":"C###A","2":"C###D","3":"C###B"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"C###D###A"}]}],"app

liedproblems":{}},"substems":[]}

NLP: TriangleRelation:△ABC,EqualityRelation{∠ABC=(1/4*Pi)},EqualityRelation{∠ACB=(1/3*Pi)},EqualityRelation{AB=3*(2^(1/2))},PointOnLineRelation{point=D, line=BA, isConstant=false, extension=true},EqualityRelation{∠ADC=∠ACB},InscribedShapeOfCircleRelation{closedShape=△ACD, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}},EqualityRelation{BC=v_0},Calculation:(ExpressRelation:[key:]v_0),圆的半径：CircleRelation{circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]BC)},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]CO)}

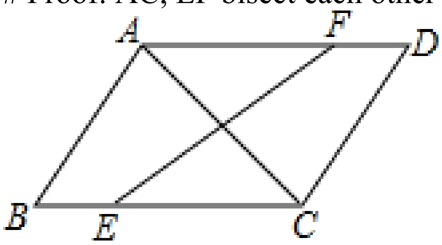
435, topic: FIG, to BC Rt △ABC hypotenuse side is on the same side as the square of △ABC BCEF, set square center point O, AO is connected if AB =4, $ AO =6 \ sqrt {. } $ 2, AC seeking long. #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000034724_Q_1.jpg","coordinates":{"A":"5.00,0.00","B":"4.52,1.94","C":"12.76,1.94","E":"12.76,-6.31","F":"4.51,-6.31","O":"8.64,-2.19","H":"6.16,0.29"},"collineations":{"0":"B###A","1":"O###A","2":"B###F","3":"B###C","4":"C###E","5":"E###F","6":"F###O###C","7":"A###H###C","8":"B###H###O###E"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP:
EqualityRelation{AC=v_0},RightTriangleRelation:RightTriangle:△ABC[Optional.of(A)],RightTriangleRelation:RightTriangle:△ABC[Optional.of(A)],SquareRelation{square=Square:BCEF},SegmentRelation:BC,SquareRelation{square=Square:BCEFintersection :
O},SegmentRelation:AO,EqualityRelation{AB=4},EqualityRelation{AO=6*(2^(1/2))},Calculation:(ExpressRelation:[key:]v_0),SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]AC)}

436, topic: Given: As shown in □ABCD, the points E, F, respectively, in the BC, AD, and BE =DF #% # Proof: AC, EF bisect each other #% # <img>.

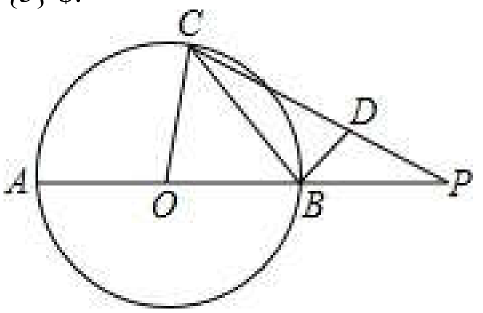


graph:
{"stem":{"pictures":[{"picturename":"1000081625_Q_1.jpg","coordinates":{"A":"1.00,4.00","B":"0.00,0.00","C":"5.00,0.00","D":"6.00,4.00","E":"1.00,0.00","F":"5.00,4.00"},"collineations":{"0":"A###F###D","1":

"B###E###C","2":"B###A","3":"D###C","4":"E###F","5":"C###A"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: ParallelogramRelation{parallelogram=Parallelogram:ABCD},PointOnLineRelation{point=E, line=BC, isConstant=false, extension=false},PointOnLineRelation{point=F, line=AD, isConstant=false, extension=false},EqualityRelation{BE=DF},ProveConclusionRelation:[LineDecileSegmentRelation [iLine1=AC, iLine2=EF,
crossPoint=Optional.absent()]],ProveConclusionRelation:[LineDecileSegmentRelation [iLine1=EF, iLine2=AC, crossPoint=Optional.absent()]]

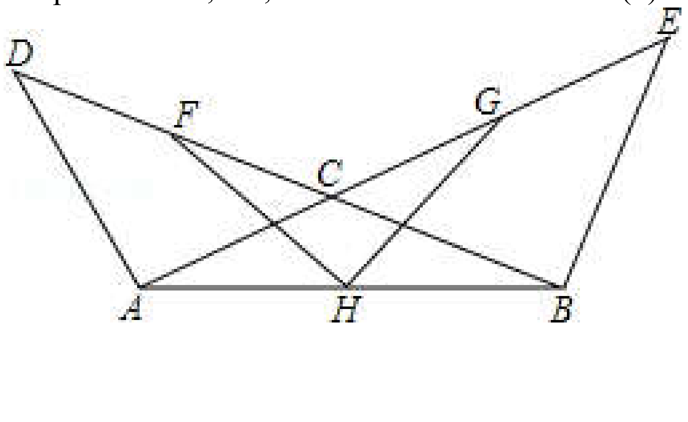
437, topic: FIG, AB is the diameter of ⊙O, AB extended to P, making $ BP =OB $, #% # BD perpendicular to the string the BC, pedal to point B, the point D is provided on the PC $ \. angle PCB =\ alpha $, $ \ angle POC =\ beta $. #% # Confirmation $ \ tan \ alpha \ cdot tan \ frac {\ beta} {2} =\ frac {1} {3} $.



graph:
{"stem":{"pictures":[{"picturename":"1000010396_Q_1.jpg","coordinates":{"A":"-5.00,0.00","B":"5.00,0.00","C":"0.45,4.98","D":"6.07,2.05","O":"0.00,0.00","P":"10.00,0.00"},"collineations":{"0":"B###A###D###P","1":"C###O","2":"D###B","3":"C###D###P","4":"C###B"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"C###B###A"}]}],"appliedproblems":{}},"substems":[]}

NLP: DiameterRelation{diameter=AB, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, length=null},PointOnLineRelation{point=P, line=AB, isConstant=false, extension=true},EqualityRelation{BP=BO},ChordOfCircleRelation{chord=BC, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, chordLength=null,straightLine=null},LinePerpRelation{line1=BD, line2=BC, crossPoint=B},PointOnLineRelation{point=D, line=PC, isConstant=false, extension=false},EqualityRelation{∠BCD=α},EqualityRelation{∠POC=β},ProveConclusionRelation:[Proof: EqualityRelation{tan(α)*tan((β)/2)=(1/3)}]

438, topic: FIG known AE, BD intersect at point C, AC =AD, BC =BE, F, G, H, respectively, is the midpoint of DC, CE, AB Verification of:. #% # (1) HF =HG;. #% # (2) ∠FHG =∠DAC #% # <img>

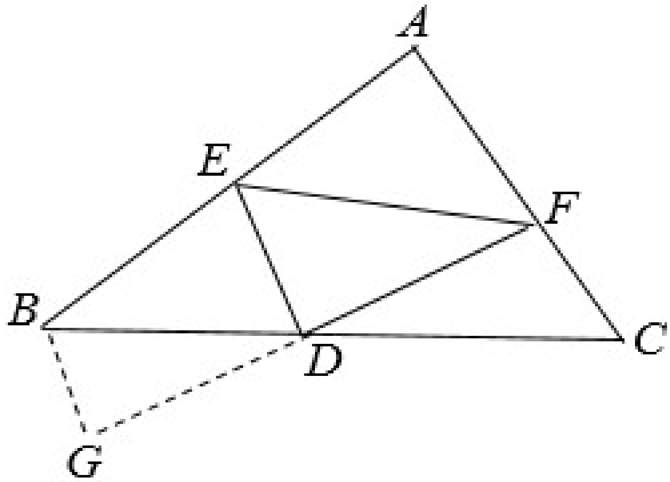


graph:
{"stem":{"pictures":[{"picturename":"1000041565_Q_1.jpg","coordinates":{"A":"-9.97,2.04","B":"-5.98,2.

04","C":"-7.98,2.86","D":"-10.80,4.03","E":"-5.16,4.03","F":"-9.39,3.45","G":"-6.57,3.45","H":"-7.98,2.04"},"collineations":{"0":"A###H###B","1":"A###D","2":"B###E","3":"D###F###C###B","4":"A###C###G###E","5":"F###H","6":"G###H"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: LineCrossRelation [crossPoint=Optional.of(C), iLine1=AE, iLine2=BD],EqualityRelation{AC=AD},EqualityRelation{BC=BE},MiddlePointOfSegmentRelation{middlePoint=F,segment=DC},MiddlePointOfSegmentRelation{middlePoint=G,segment=CE},MiddlePointOfSegmentRelation{middlePoint=H,segment=AB},ProveConclusionRelation:[Proof: EqualityRelation{FH=GH}],ProveConclusionRelation:[Proof: EqualityRelation{∠FHG=∠CAD}]

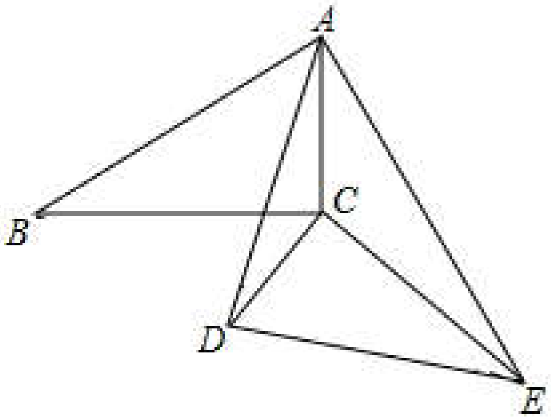
439, topic: FIG, $ △ABC $ in, E, F, respectively, AB, the AC, $ DE⊥DF $, D is the midpoint of BC, FD extended to G, so $ DG =DF $, connected BG .?% # # (1) Proof: $ △BGD≌ △CFD $; #% # (2) comparison $ BE + CF $ EF and the size of?.



graph:
{"stem":{"pictures":[{"picturename":"1000026552_Q_1.jpg","coordinates":{"A":"0.49,2.53","B":"-2.50,0.00","C":"2.99,0.00","D":"0.00,0.00","E":"-0.74,1.49","F":"2.00,1.00","G":"-2.00,-1.00"},"collineations":{"0":"B###D###C","1":"G###F###D","2":"F###A###C","3":"B###A###E","4":"F###E","5":"B###G","6":"D###E"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleRelation:△ABC,PointOnLineRelation{point=E, line=AB, isConstant=false, extension=false},PointOnLineRelation{point=F, line=AC, isConstant=false, extension=false},LinePerpRelation{line1=DE, line2=DF, crossPoint=D},MiddlePointOfSegmentRelation{middlePoint=D,segment=BC},PointOnLineRelation{point=G, line=FD, isConstant=false, extension=true},EqualityRelation{DG=DF},SegmentRelation:BG,数字比较大小：DualExpressRelation{expresses=[Express:[EF], Express:[BE+CF]]},ProveConclusionRelation:[Proof: TriangleCongRelation{triangleA=△BGD, triangleB=△CFD}],SolutionConclusionRelation{relation=数字比较大小：DualExpressRelation{expresses=[Express:[EF], Express:[BE+CF]]}}

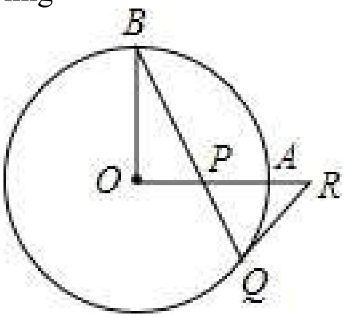
440, topic: FIG known ∠ACB =∠DCE =90 °, ∠ABC =∠CED =∠CAE =30 °, AC =3, AE =8, seeking long AD #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000081327_Q_1.jpg","coordinates":{"A":"0.00,1.50","B":"-2.60,0.00","C":"0.00,0.00","D":"-1.14,-1.15","E":"2.00,-1.96"},"collineations":{"0":"A###D","1":"A###C","2":"A###B","3":"A###E","4":"B###C","5":"C###E","6":"E###D","7":"C###D"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: EqualityRelation{AD=v_0},MultiEqualityRelation [multiExpressCompare=∠ACB=∠DCE=(1/2*Pi), originExpressRelationList=[], keyWord=null, result=null],MultiEqualityRelation [multiExpressCompare=∠ABC=∠CED=∠CAE=(1/6*Pi), originExpressRelationList=[], keyWord=null, result=null],EqualityRelation{AC=3},EqualityRelation{AE=8},Calculation:(ExpressRelation:[key:]v_0),SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]AD)}

441, topic: As shown, the radius OA and OB are $ ⊙O $ and $ OA⊥OB $, P is any point OA, BP extension lines cross at the point Q $ ⊙O $, $ ⊙ through point Q O $ tangent to the point of an extension line OA cross R.?#%#(1) Proof: $ RP =RQ $; #% # (2) when the $ OP =PA =1 $, PQ Determine length <?.img>



graph:
{"stem":{"pictures":[{"picturename":"1000008294_Q_1.jpg","coordinates":{"A":"2.00,0.00","B":"0.00,2.00","P":"1.00,0.00","Q":"1.60,-1.20","R":"2.50,0.00","O":"0.00,0.00"},"collineations":{"0":"Q###P###B","1":"B###O","2":"O###P###A###R","3":"Q###R"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"A###B###Q"}]}],"appliedproblems":{}},"substems":[]}

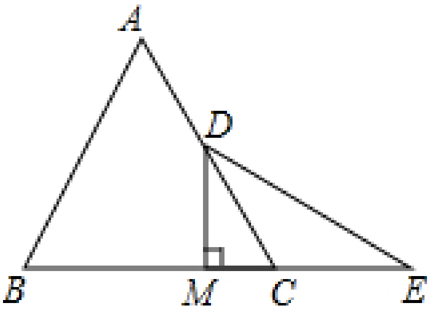
NLP: RadiusRelation{radius=OA, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, length=null},RadiusRelation{radius=OB, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, length=null},LinePerpRelation{line1=OA, line2=OB, crossPoint=O},PointOnLineRelation{point=P, line=OA, isConstant=false, extension=false},LineCrossCircleRelation{line=BP, circle=⊙O, crossPoints=[Q], crossPointNum=1},LineCrossRelation [crossPoint=Optional.of(R), iLine1=OA, iLine2=RQ],PointOnLineRelation{point=Q, line=RQ, isConstant=false, extension=false},EqualityRelation{PQ=v_1},MultiEqualityRelation [multiExpressCompare=OP=AP=1, originExpressRelationList=[], keyWord=null, result=null],Calculation:(ExpressRelation:[key:]v_1),ProveConclusionRelation:[Proof: EqualityRelation{PR=QR}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]PQ)}

442, topic: FIG known segment AB #% # (. 1) are plotted: C extend to the line segment AB, so that AC =3AB; when #% # (2) When the length of AB is equal to 2cm, seeking the line segment BC long. #% # <img>

graph:
{"stem":{"pictures":[{"picturename":"1000081104_Q_1.jpg","coordinates":{"A":"0.00,0.00","B":"2.00,0.00","C":"6.00,0.00"},"collineations":{"0":"A###B###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: SegmentRelation:AB,PointOnLineRelation{point=C, line=AB, isConstant=false, extension=true},EqualityRelation{AC=3*AB},EqualityRelation{AB=v_0},EqualityRelation{BC=v_1},EqualityRelation{v_0=2},Calculation:(ExpressRelation:[key:]v_1),SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]BC)}

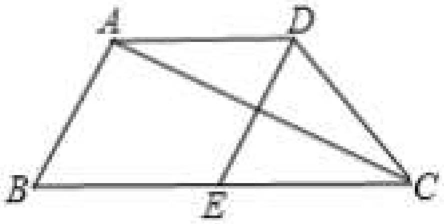
443, topic: FIG, equilateral triangle ABC, D is the midpoint of the AC, E is a little extended line BC, and CE =CD, DM⊥BC, to M. confirmation Pedal: M is in BE point. #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000072715_Q_1.jpg","coordinates":{"A":"2.00,3.46","B":"0.00,0.00","C":"4.00,0.00","D":"3.00,1.73","E":"6.00,0.00","M":"3.00,0.00"},"collineations":{"0":"B###M###C###E","1":"A###D###C","2":"B###A","3":"D###E","4":"D###M"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: RegularTriangleRelation:RegularTriangle:△ABC,MiddlePointOfSegmentRelation{middlePoint=D,segment=AC},PointOnLineRelation{point=E, line=BC, isConstant=false, extension=true},EqualityRelation{CE=CD},LinePerpRelation{line1=DM, line2=BC, crossPoint=M},ProveConclusionRelation:[Proof: MiddlePointOfSegmentRelation{middlePoint=M,segment=BE}]

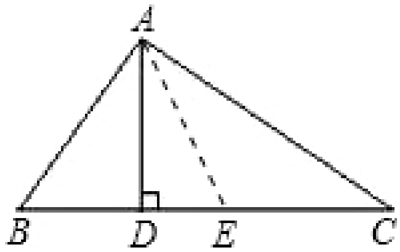
444, topic: Given: As shown, the quadrilateral ABCD, AD∥BC, CA equally ∠DCE, AB⊥AC, E is the midpoint of the BC test description:. DE, AC mutually perpendicular bisector #% # <img. >



graph:
{"stem":{"pictures":[{"picturename":"1000041786_Q_1.jpg","coordinates":{"A":"-12.50,7.60","B":"-14.00,5.00","C":"-8.00,5.00","D":"-9.50,7.60","E":"-11.00,5.00"},"collineations":{"0":"A###D","1":"A###C","2":"A###B","3":"B###E###C","4":"D###E","5":"D###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: Know:QuadrilateralRelation{quadrilateral=ABCD},LineParallelRelation [iLine1=AD, iLine2=BC],AngleBisectorRelation{line=CA,angle=∠DCE, angle1=∠ACD, angle2=∠ACE},LinePerpRelation{line1=AB, line2=AC, crossPoint=A},MiddlePointOfSegmentRelation{middlePoint=E,segment=BC},ProveConclusionRelation:[MiddlePerpendicularRelation [iLine1=DE, iLine2=AC, crossPoint=Optional.absent()]],ProveConclusionRelation:[MiddlePerpendicularRelation [iLine1=AC, iLine2=DE, crossPoint=Optional.absent()]]

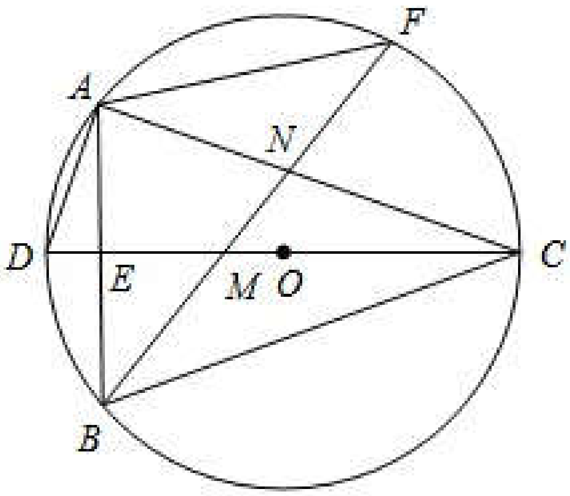
445, topic: FIG, AD △ABC is high, ∠B =2∠C, BD =5, BC =20, the length AB required #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000080525_Q_1.jpg","coordinates":{"A":"-1.75,2.17","B":"-3.00,0.00","C":"2.00,0.00","D":"-1.75,0.00","E":"-0.50,0.00"},"collineations":{"0":"B###D###E###C","1":"A###B","2":"A###D","3":"A###E","4":"A###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: EqualityRelation{AB=v_0},TriangleRelation:△ABC,EqualityRelation{∠ABD=2*∠ACE},EqualityRelation{BD=5},EqualityRelation{BC=20},Calculation:(ExpressRelation:[key:]v_0),LinePerpRelation{line1=AD, line2=BD, crossPoint=D},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]AB)}

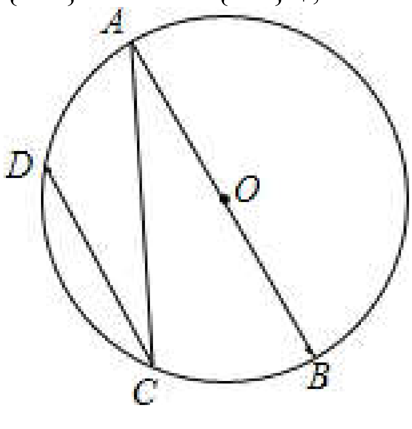
446, topic: Given: As shown, the contact with the $ \triangle ABC $ $ \odot O $, diameter $ CD\perp AB $, pedal is E, the chord cross BF CD at point M, at the cross point of AC N, and $ BF =AC $, link AD.?#%#(1) Prove:? $ AD \cdot BE =DE \cdot BC $; #% # (2) Please determine the line BM, there is kind of the equivalent relationship between MN, MF and give proof;? #% # (3) when the $ \angle ACB =30 ° $, $ \odot O $ radius is 4, seeking $ \frac {{{S} _ {\vartriangle ANF}}} {{{ S} _ {\vartriangle ABF}}} $ of values.



graph:
{"stem":{"pictures":[{"picturename":"1000027090_Q_1.jpg","coordinates":{"A":"2.54,8.00","B":"2.54,4.00","C":"10.00,6.00","D":"2.00,6.00","E":"2.54,6.00","F":"8.00,9.46","M":"4.54,6.00","N":"5.69,7.16","O":"6.00,6.00"},"collineations":{"0":"D###A","1":"A###E###B","2":"A###N###C","3":"A###F","4":"B###N###F","5":"B###C","6":"C###O###M###E###D"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: DiameterRelation{diameter=CD, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, length=null},ChordOfCircleRelation{chord=BF, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, chordLength=null,straightLine=null},InscribedShapeOfCircleRelation{closedShape=△ABC, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}},LinePerpRelation{line1=CD, line2=AB, crossPoint=E},LineCrossRelation [crossPoint=Optional.of(M), iLine1=BF, iLine2=CD],LineCrossRelation [crossPoint=Optional.of(N), iLine1=BF, iLine2=AC],EqualityRelation{BF=AC},SegmentRelation:AD,Calculation:(ExpressRelation:[key:](BM/MN)),Calculation:(ExpressRelation:[key:](MN/FM)),EqualityRelation{∠BCN=(1/6*Pi)},RadiusRelation{radius=null, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, length=Express:[4]},Calculation:(ExpressRelation:[key:]S_△AFN)/S_△ABF),ProveConclusionRelation:[Proof: EqualityRelation{AD*BE=DE*BC}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:](BM/MN))},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:](MN/FM))},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]S_△AFN)/S_△ABF)}

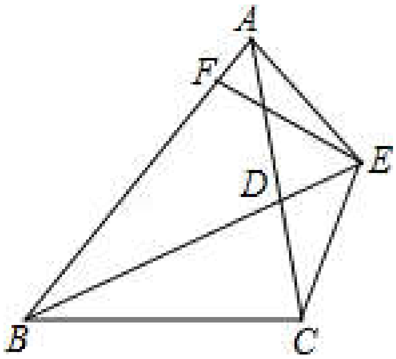
447, topic:. As shown, the diameter of the known ⊙O AB =d, chord AC a, $ \ =A, Distance =widehat {AD} \ widehat {BC} $, seek between points D #% # < img>



graph:
{"stem":{"pictures":[{"picturename":"1000083426_Q_1.jpg","coordinates":{"A":"-1.11,1.66","B":"1.11,-1.66","C":"0.00,-2.00","D":"-1.85,0.77","O":"0.00,0.00"},"collineations":{"0":"B###O###A","1":"A###C","2":"D###C"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"A###B###C###D"}]}],"appliedproblems":{}},"substems":[]}

NLP: DistanceOfDualPointsRelation{pointA=A, pointB=D, distance=Express:[v_0]},DiameterRelation{diameter=AB, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, length=Express:[AB=d]},ChordOfCircleRelation{chord=AC, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, chordLength=null,straightLine=null},EqualityRelation{AC=a},EqualityRelation{⌒AD=⌒BC},Calculation:(ExpressRelation:[key:]v_0),SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]v_0)}

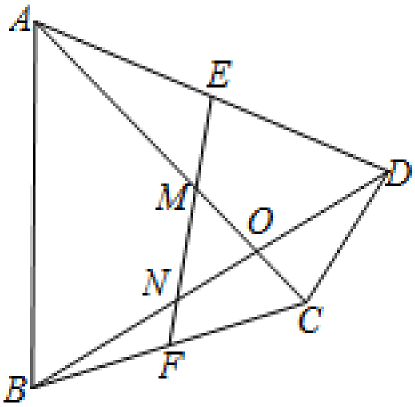
448, topic: Given: Figure, △ABC BD is the angle bisector, and BD =BC, E is a point on an extension line BD, BE =BA, through E for EF⊥AB, F # is the pedal % # (1) Proof: △ABD≌ △EBC; #% # (2) Proof: ∠BCE + ∠BCD =180 °; #% # (3) Proof: BA + BC =2BF #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"D7F4F9174E4E4BF0A503FD15B81F0662.jpg","coordinates":{"A":"-10.20,8.07","B":"-14.00,3.00","C":"-9.00,3.00","D":"-9.53,5.24","E":"-8.33,5.83","F":"-10.60,7.54"},"collineations":{"0":"B###F###A","1":"A###D###C","2":"A###E","3":"C###B","4":"B###D###E","5":"C###E","6":"F###E"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[{"substemid":"2","questionrelies":"1","pictures":[],"appliedproblems":{}},{"substemid":"3","questionrelies":"1","pictures":[],"appliedproblems":{}}]}

NLP: TriangleRelation:△ABC,EqualityRelation{BD=BC},PointOnLineRelation{point=E, line=BD, isConstant=false, extension=true},EqualityRelation{BE=AB},LinePerpRelation{line1=EF, line2=AB, crossPoint=F},PointOnLineRelation{point=E, line=EF, isConstant=false, extension=false},AngleBisectorRelation{line=BD,angle=∠CBF, angle1=∠DBF, angle2=∠CBD},ProveConclusionRelation:[Proof: TriangleCongRelation{triangleA=△ABD, triangleB=△EBC}],ProveConclusionRelation:[Proof: EqualityRelation{∠BCE+∠BCD=(Pi)}],ProveConclusionRelation:[Proof: EqualityRelation{AB+BC=2*BF}]

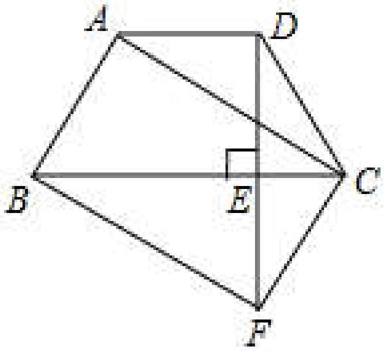
449, topic: As shown, the quadrilateral ABCD, AC, BD intersect at point O, E, F is the AD, the midpoint of BC, EF respectively cross AC, BD to M, N, and OM =ON #% #. Proof: AC =BD #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000034245_Q_1.jpg","coordinates":{"A":"-13.00,7.00","B":"-12.00,2.00","C":"-8.00,3.00","D":"-8.00,5.00","E":"-10.50,6.00","F":"-10.00,2.50","M":"-10.34,4.87","N":"-10.13,3.40","O":"-9.29,4.03"},"collineations":{"0":"A###B","1":"B###F###C","2":"C###D","3":"A###E###D","4":"A###M###O###C","5":"E###M###N###F","6":"B###N###O###D"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: Know:QuadrilateralRelation{quadrilateral=ABCD},LineCrossRelation [crossPoint=Optional.of(O), iLine1=AC, iLine2=BD],MiddlePointOfSegmentRelation{middlePoint=E,segment=AD},MiddlePointOfSegmentRelation{middlePoint=F,segment=BC},LineCrossRelation [crossPoint=Optional.of(M), iLine1=EF, iLine2=AC],LineCrossRelation [crossPoint=Optional.of(N), iLine1=EF, iLine2=BD],EqualityRelation{MO=NO},ProveConclusionRelation:[Proof: EqualityRelation{AC=BD}]

450, topic: As shown, the quadrilateral ABCD, AD // BC, AB =DC, through the point D as DE⊥BC, pedal is E, and DE extended to F, so that the link EF =DE BF, CF, AC. . #% # (1) Proof: quadrilateral ABFC parallelogram; #% # (2) if $ {{DE} ^ {2}} =bE \ cdot CE $, confirmation quadrilateral ABFC rectangular #% # <img. >

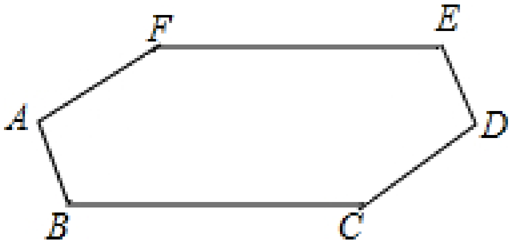


graph:
{"stem":{"pictures":[{"picturename":"1000062130_Q_1.jpg","coordinates":{"A":"-3.00,2.00","B":"-4.00,0.00","C":"1.00,0.00","D":"0.00,2.00","E":"0.00,0.00","F":"0.00,-2.00"},"collineations":{"0":"B###C###E","1":"F###E###D","2":"A###B","3":"A###C","4":"A###D","5":"F###B","6":"D###C","7":"F###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: Know:QuadrilateralRelation{quadrilateral=ABCD},LineParallelRelation [iLine1=AD, iLine2=BC],EqualityRelation{AB=CD},LinePerpRelation{line1=DE, line2=BC, crossPoint=E},PointOnLineRelation{point=F, line=DE, isConstant=false, extension=true},EqualityRelation{EF=DE},SegmentRelation:BF,SegmentRelation:CF,SegmentRelation:AC,EqualityRelation{((DE)^2)=BE*CE},ProveConclusionRelation:[Proof: ParallelogramRelation{parallelogram=Parallelogram:ABFC}],ProveConclusionRelation:[Proof:

RectangleRelation{rectangle=Rectangle:ABFC}]

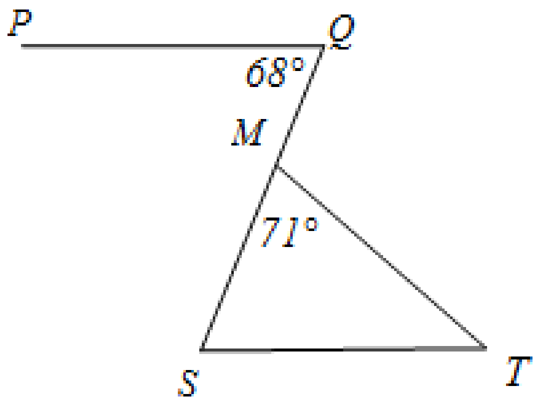
451, topic: Given: FIG, AB =DE, BC =EF, CD =FA, ∠A =∠D Proof: ∠ABC =∠DEF #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000030751_Q_1.jpg","coordinates":{"A":"-13.00,4.00","B":"-12.00,2.00","C":"-6.00,2.00","D":"-4.00,4.00","E":"-5.00,6.00","F":"-11.00,6.00"},"collineations":{"0":"A###B","1":"B###C","2":"C###D","3":"D###E","4":"E###F","5":"A###F"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP:
EqualityRelation{AB=DE},EqualityRelation{BC=EF},EqualityRelation{CD=AF},EqualityRelation{∠BAF=∠CDE},ProveConclusionRelation:[Proof: EqualityRelation{∠ABC=∠DEF}]

452, topic: FIG, PQ // ST, ∠PQS =68 °, ∠SMT =71 °, the required degree ∠S and ∠T #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000051258_Q_1.jpg","coordinates":{"P":"-9.00,5.00","Q":"-6.00,5.00","M":"-6.48,3.82","S":"-7.22,1.98","T":"-4.39,2.00"},"collineations":{"0":"P###Q","1":"S###T","2":"Q###M###S","3":"M###T"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: LineParallelRelation [iLine1 =PQ, iLine2 =ST], EqualityRelation {∠MQP =(17/45 * Pi)}, EqualityRelation {∠SMT =(71/180 * Pi)}, the size of the required angle: AngleRelation {angle =∠MST}, aNGULAR size: AngleRelation {angle =∠MTS}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] ∠MST)}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] ∠MTS)}

453, topic: (1) a study group in a triangle congruent inquiry found following the typical pattern substantially as shown in FIG. 1, the △ABC, ∠BAC =90 °, AB =AC, linear $ l $. after the point A, BD⊥ straight $ l $, CE⊥ straight $ $ L, respectively pedal point D, E Prove:.. DE =BD + CE #% # (2) members thought Liu, if three other than a right angle, it will set up a conclusion whether it? As shown in FIG. 2, (1) the conditions were changed: in the △ABC, AB =AC, D, A, E three points are on a straight line L $ $, and has $ \ angle BDA =\ angle AEC =\ angle BAC =\ alpha $, where $ \ alpha $ is any acute or obtuse ask conclusions DE =BD + CE is satisfied if set up, would you please give proof;.? if established, please explain the reason #% # (3). math teacher appreciation for their curiosity and encourage them to use this knowledge to solve problems: 3, △over the edge AB ABC, AC and a square for square ABDE ACFG out, AH is high on the edge of BC, extended HA EG cross at point I, Proof: I is the midpoint of EG #% # <img>.

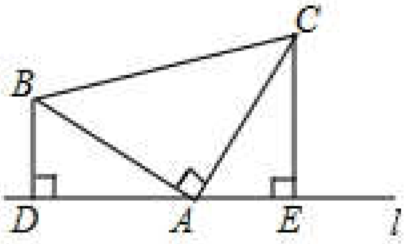


图1

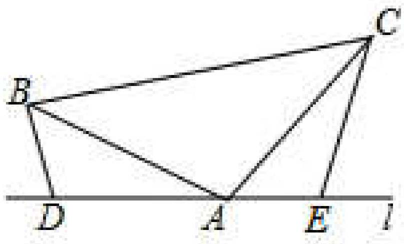


图2

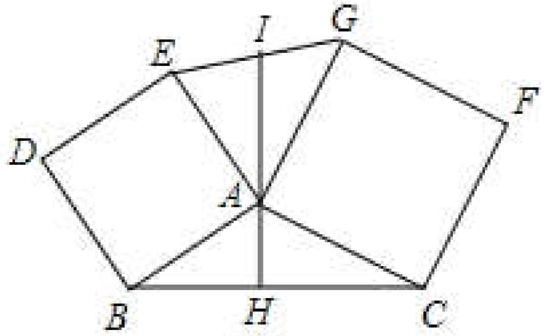


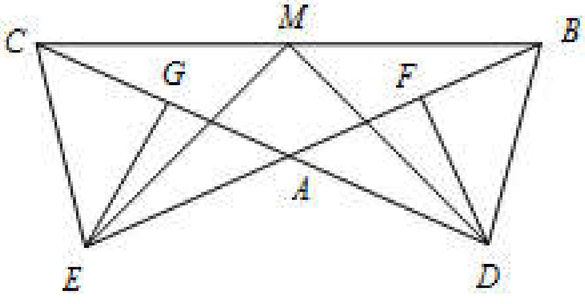
图3

graph:
{"stem":{"pictures":[],"appliedproblems":{}},"substems":[{"substemid":"1","questionrelies":"","pictures":[{"picturename":"1000038138_Q_1.jpg","coordinates":{"A":"-6.00,7.00","B":"-9.00,9.00","C":"-4.00,10.00","D":"-9.00,7.00","E":"-4.00,7.00"},"collineations":{"0":"B###A","1":"A###C","2":"B###C","3":"D###A###E","4":"C###E","5":"B###D"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},{"substemid":"2","questionrelies":"","pictures":[{"picturename":"1000038138_Q_2.jpg","coordinates":{"A":"-4.56,14.98","B":"-7.01,16.19","C":"-2.29,16.50","D":"-6.42,14.99","E":"-3.02,14.96"},"collineations":{"0":"B###A","1":"A###C","2":"B###C","3":"D###A###E","4":"C###E","5":"B###D"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},{"substemid":"3","questionrelies":"","pictures":[{"picturename":"1000038138_Q_3.jpg","coordinates":{"A":"8.00,19.00","B":"6.00,17.00","C":"11.00,17.00","D":"4.00,19.00","E":"6.00,21.00","F":"13.00,20.00","G":"10.00,22.00","H":"8.00,17.00","I":"8.00,21.50"},"collineations":{"0":"I###A###H","1":"E###I###G","2":"B###H###C","3":"D###E","4":"D###B","5":"A###E","6":"A###B","7":"A###C","8":"F###C","9":"A###G","10":"G###F"},"variable-equals":{},"circles":[]}],"appliedproblems":{}}]}

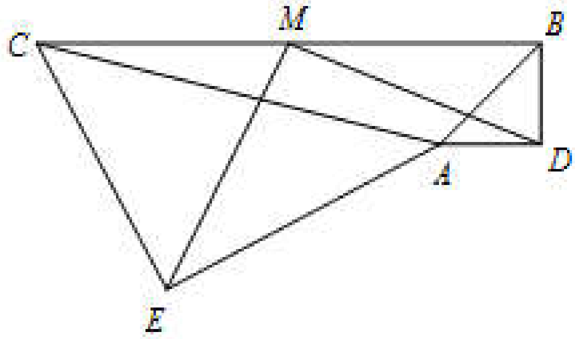
NLP: (ExpressRelation:[key:]1),TriangleRelation:△ABC,EqualityRelation{∠BAC=(1/2*Pi)},EqualityRelation{AB=AC},PointOnLineRelation{point=A, line=StraightLine[l] analytic :y=k_l*x+b_l slope:null b:null isLinearFunction:false, isConstant=false, extension=false},LinePerpRelation{line1=AD, line2=BD, crossPoint=D},LinePerpRelation{line1=DE, line2=CE,
crossPoint=E},(ExpressRelation:[key:]2),EqualityRelation{AB=AC},PointOnLineRelation{point=D, line=StraightLine[l] analytic :y=k_l*x+b_l slope:null b:null isLinearFunction:false, isConstant=false, extension=false},PointOnLineRelation{point=A, line=StraightLine[l] analytic :y=k_l*x+b_l slope:null b:null isLinearFunction:false, isConstant=false, extension=false},PointOnLineRelation{point=E, line=StraightLine[l] analytic :y=k_l*x+b_l slope:null b:null isLinearFunction:false, isConstant=false, extension=false},MultiEqualityRelation [multiExpressCompare=∠ADB=∠AEC=∠BAC=α, originExpressRelationList=[], keyWord=null, result=null],LinePerpRelation{line1=AH, line2=BC, crossPoint=},LineCrossRelation [crossPoint=Optional.of(I), iLine1=HA, iLine2=EG],LinePerpRelation{line1=AH, line2=BH, crossPoint=H},ProveConclusionRelation:[Proof: EqualityRelation{DE=BD+CE}],ProveConclusionRelation:[Proof: EqualityRelation{DE=BD+CE}],ProveConclusionRelation:[Proof: MiddlePointOfSegmentRelation{middlePoint=I,segment=EG}]

454, topic: (1) shown in (1), the isosceles △ABC is known AB =AC, AB and AC, respectively hypotenuse, as isosceles Rt △ABD outwardly of △ABC isosceles Rt △ACE, for DF⊥AB at point F, EG⊥AC at point G, M is the midpoint of BC, MD and ME link Proof: ME =MD; #% # (2) shown in (2), in any

△ABC, if the AB and AC, respectively hypotenuse, as isosceles outwardly of △ABC Rt △ABD, isosceles Rt △ACE, M is the midpoint of BC, MD and ME link, MD and ME having how the the quantitative relationship? give proof. #% # <img>



图(1)



图(2)

graph:
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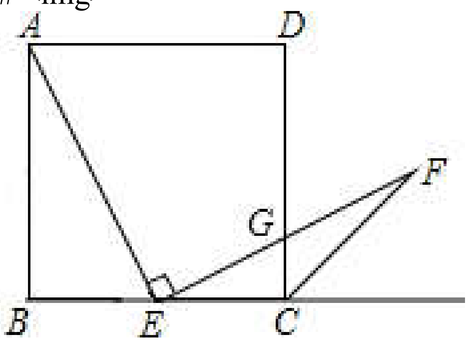
NLP:
IsoscelesTriangleRelation:IsoscelesTriangle:△ABC[Optional.of(A)],EqualityRelation{AB=AC},LineRoleRelation{Segment=AB, roleType=HYPOTENUSE},LineRoleRelation{Segment=AC, roleType=HYPOTENUSE},IsoscelesRightTriangleRelation:IsoscelesRightTriangle:IsoscelesTriangle:△ACE[Optional.of(E)][Optional.of(E)],LinePerpRelation{line1=DF, line2=AB, crossPoint=F},LinePerpRelation{line1=EG, line2=AC, crossPoint=G},MiddlePointOfSegmentRelation{middlePoint=M,segment=BC},SegmentRelation:MD,SegmentRelation:ME,LineRoleRelation{Segment=AB, roleType=HYPOTENUSE},LineRoleRelation{Segment=AC, roleType=HYPOTENUSE},IsoscelesRightTriangleRelation:IsoscelesRightTriangle:IsoscelesTriangle:△ACE[Optional.of(E)][Optional.of(E)],MiddlePointOfSegmentRelation{middlePoint=M,segment=BC},SegmentRelation:MD,SegmentRelation:ME,Calculation:(ExpressRelation:[key:](DM/EM)),ProveConclusionRelation:[Proof: EqualityRelation{EM=DM}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:](DM/EM))}

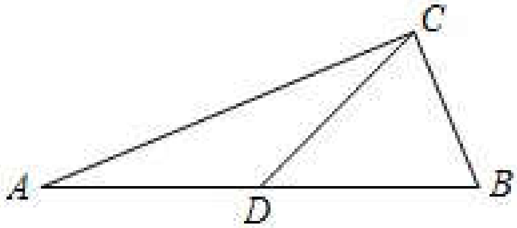
455, topic: As shown in the square ABCD, the point E is the midpoint of the side BC, EF straight exterior angle bisector of the square cross at point F., Cross-DC at point G, and AE⊥EF Proof: AE =EF. #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000030867_Q_1.jpg","coordinates":{"A":"-10.00,4.00","B":"-10.00,0.00","C":"-6.00,0.00","D":"-6.00,4.00","E":"-8.00,0.00","F":"-4.00,2.00","G":"-6.00,1.00"},"collineations":{"0":"A###B","1":"B###E###C","2":"D###C###G","3":"A###D","4":"E###A","5":"E###G###F","6":"C###F"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: AngleBisectorRelation{line=M_0N_0,angle=∠α, angle1=null, angle2=null},SquareRelation{square=Square:ABCD},MiddlePointOfSegmentRelation{middlePoint=E,segment=BC},LineCrossRelation [crossPoint=Optional.of(G), iLine1=EF, iLine2=DC],LinePerpRelation{line1=AE, line2=EF, crossPoint=E},ProveConclusionRelation:[Proof: EqualityRelation{AE=EF}]

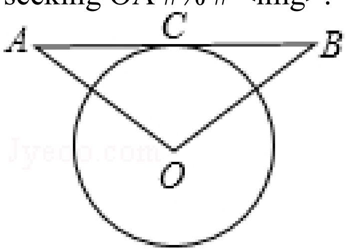
456, topic: FIG at $ △ABC $, the point D is the midpoint of AB, $ AC =12 $, $ BC =5 $, $ CD =\ frac {{13}} {2} $ confirmation. : $ △ABC $ is a right triangle.



graph:
{"stem":{"pictures":[{"picturename":"1000007055_Q_1.jpg","coordinates":{"A":"0.00,0.00","B":"13.00,0.00","C":"10.15,6.40","D":"6.50,0.00","E":"2.80,-6.37"},"collineations":{"0":"A###C","1":"D###A###B","2":"B###C","3":"A###E"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleRelation:△ABC,MiddlePointOfSegmentRelation{middlePoint=D,segment=AB},EqualityRelation{AC=12},EqualityRelation{BC=5},EqualityRelation{CD=(13/2)},ProveConclusionRelation:[Proof: RightTriangleRelation:RightTriangle:△ABC[Optional.of(C)]]

457, topic: FIG, AB ⊙O tangent to the point C, OA =OB, ⊙O diameter of 8cm, AB =10cm, long seeking OA #% # <img>.

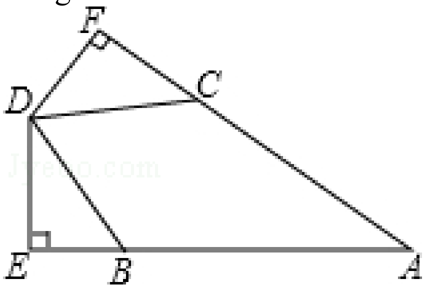


graph:
{"stem":{"pictures":[{"picturename":"1000083405_Q_1.jpg","coordinates":{"A":"-2.50,2.00","B":"2.50,2.00","C":"0.00,2.00","O":"0.00,0.00"},"collineations":{"0":"A###C###B","1":"B###O","2":"A###O"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"C"}]}],"appliedproblems":{}},"substems":[]}

NLP: EqualityRelation{AO=v_0},LineContactCircleRelation{line=AB, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, contactPoint=Optional.of(C), outpoint=Optional.absent()},EqualityRelation{AO=BO},DiameterRelation{diameter=null, circle=Circle[⊙

O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, length=Express:[8]},EqualityRelation{AB=10},Calculation:(ExpressRelation:[key:]v_0),SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]AO)}

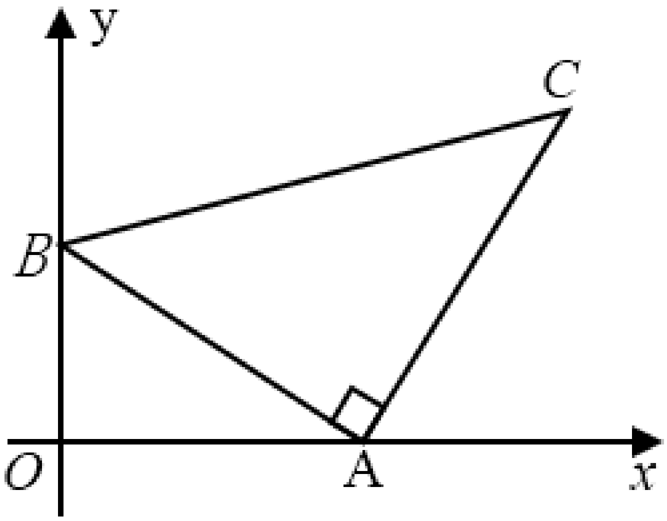
458, topic: FIG, AB =AC, BD =CD, DE⊥AB at point E, DF⊥AC at point F, Proof: DE =DF #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000029142_Q_1.jpg","coordinates":{"A":"10.00,2.00","B":"4.00,2.00","C":"4.71,4.83","D":"2.00,4.00","E":"2.00,2.00","F":"2.94,5.77"},"collineations":{"0":"F###D","1":"E###D","2":"C###D","3":"D###B","4":"F###C###A","5":"E###B###A"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: EqualityRelation{AB=AC},EqualityRelation{BD=CD},LinePerpRelation{line1=DE, line2=AB, crossPoint=E},LinePerpRelation{line1=DF, line2=AC, crossPoint=F},ProveConclusionRelation:[Proof: EqualityRelation{DE=DF}]

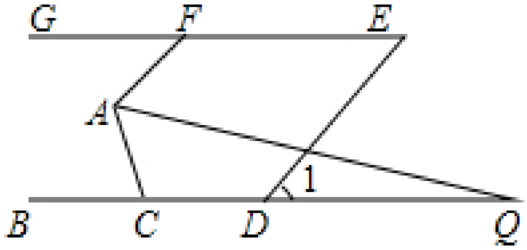
459, topic: FIG, points A, B are x-axis positive axis, a point on the y-axis positive axis, configured to AB isosceles $ Rt △ABC $, $ ∠BAC =90 ° $ is a right-angled edge. ?% # # (1) If the coordinate point C is $ (6,4) $, find the point a, the point B of coordinates;? #% # (2) when the $ ∠OAB =30 ° $, $ a \ left ({\ sqrt 3, 0} \ right) $, are the coordinates of point C.



graph:
{"stem":{"pictures":[{"picturename":"1000020104_Q_1.jpg","coordinates":{"A":"4.00,0.00","B":"0.00,2.00","C":"6.00,4.00","O":"0.00,0.00"},"collineations":{"0":"B###O","1":"C###A","2":"C###B","3":"B###A","4":"O###A"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[{"substemid":"2","questionrelies":"","pictures":[{"picturename":"3.2.2_15.jpg","coordinates":{"A":"1.73,0.00","B":"0.00,1.00","C":"2.73,1.73","D":"0.00,0.00"},"collineations":{"0":"B###O","1":"C###A","2":"C###B","3":"B###A","4":"O###A"},"variable-equals":{},"circles":[]}],"appliedproblems":{}}]}

NLP: PointOnLineRelation{point=A, line=StraightLine[X] analytic :y=0[x>0] slope:0 b:0 isLinearFunction:false, isConstant=false, extension=false},PointOnLineRelation{point=B, line=StraightLine[Y] analytic :x=0[y>0] slope: b: isLinearFunction:false, isConstant=false, extension=false},IsoscelesRightTriangleRelation:IsoscelesRightTriangle:IsoscelesTriangle:△ABC[Optional.of(C)][Optional.of(C)],EqualityRelation{∠BAC=(1/2*Pi)},PointRelation:C(6,4),Coordinate:PointRelation:A,Coordinate:PointRelation:B,EqualityRelation{∠BAO=(1/6*Pi)},PointRelation:A(((3^(1/2)),0)),Coordinate:PointRelation:C,SolutionConclusionRelation{relation=Coordinate:PointRelation:A},SolutionConclusionRelation{relation=Coordinate:PointRelation:B},SolutionConclusionRelation{relation=Coordinate:PointRelation:C}

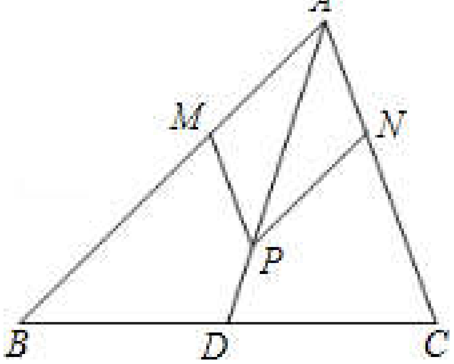
. 460, topic: FIG known BC // GE, AF // DE, ∠1 =50 ° #% # (1) required degree ∠AFG;% # # (2) When the AQ equally ∠FAC, BC at point Q, and ∠Q =15 °, the required degree ∠ACB. #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000032976_Q_1.jpg","coordinates":{"A":"0.02,1.60","B":"-1.56,0.00","C":"0.30,0.00","D":"2.50,0.00","E":"5.02,3.00","F":"1.19,3.00","G":"-1.53,3.00","Q":"6.00,0.00"},"collineations":{"0":"B###C###D###Q","1":"G###F###E","2":"A###F","3":"A###C","4":"A###Q","5":"D###E"},"variable-equals":{"0":"∠1=∠EDQ"},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: LineParallelRelation [iLine1 =BC, iLine2 =GE], LineParallelRelation [iLine1 =AF, iLine2 =DE], EqualityRelation {∠EDQ =(5/18 * Pi)}, find the size of the angle: AngleRelation {angle =∠AFG} , AngleBisectorRelation {line =AQ, angle =∠CAF, angle1 =∠CAQ, angle2 =∠FAQ}, LineCrossRelation [crossPoint =Optional.of (Q), iLine1 =AQ, iLine2 =BC], EqualityRelation {∠AQD =(1 / 12 * Pi)}, find the size of the angle: AngleRelation {angle =∠ACB}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] ∠AFG)}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] ∠ACB)}

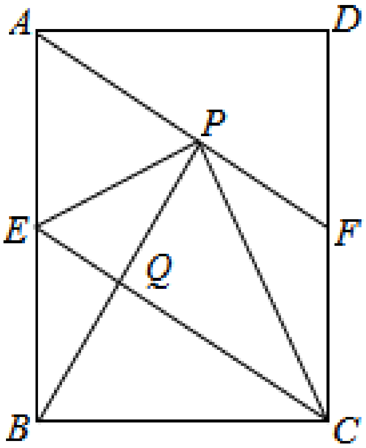
461, topic: As shown in the △ABC, BC on point D is a point, the point P on the AD, cross-over point P as PM // AC AB at point M, at point for PN // AB cross AC N #%. # (1) if point D is the midpoint of BC, and AP: PD =2: 1, seeking AM: AB value;% # # (2) If the point D is the midpoint of BC, Proof: $ \ frac {AM} {AB} =\ frac {AN} {AC} $; #% # (3) If the point D is any of the BC point, Proof: $ \ frac {AM} {AB} + \ frac {AN} {AC} =\ frac {AP} {AD} $. #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000041520_Q_1.jpg","coordinates":{"A":"0.00,3.15","B":"-2.86,0.00","C":"1.00,0.00","D":"-0.93,0.00","M":"-0.95,2.10","N":"0.33,2.10","P":"-0.62,1.05"},"collineations":{"0":"A###M###B","1":"B###D###C","2":"C###N###A","3":"A###P###D","4":"P###M","5":"P###N"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleRelation:△ABC,PointOnLineRelation{point=D, line=BC, isConstant=false, extension=false},PointOnLineRelation{point=P, line=AD, isConstant=false, extension=false},PointOnLineRelation{point=P, line=PM, isConstant=false, extension=false},LineParallelRelation [iLine1=PM, iLine2=AC],LineCrossRelation [crossPoint=Optional.of(M), iLine1=PM, iLine2=AB],LineParallelRelation [iLine1=PN, iLine2=AB],LineCrossRelation [crossPoint=Optional.of(N), iLine1=PN, iLine2=AC],MiddlePointOfSegmentRelation{middlePoint=D,segment=BC},EqualityRelation{(AP)/(DP)=(2)/(1)},Calculation:(ExpressRelation:[key:]AM/AB),MiddlePointOfSegmentRelation{middlePoint=D,segment=BC},PointOnLineRelation{point=D, line=BC, isConstant=false, extension=false},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]AM/AB)},ProveConclusionRelation:[Proof: EqualityRelation{((AM)/(AB))=((AN)/(AC))}],ProveConclusionRelation:[Proof: EqualityRelation{((AM)/(AB))+((AN)/(AC))=((AP)/(AD))}]

462, topic: As shown in the rectangle ABCD, the point E is the midpoint of the side AB, a rectangle ABCD along fold EC, so that the point B falls at the point P, as EC folds, and extending the connected AP AP post CD at point . F #% # (1) Proof: AECF quadrilateral is a parallelogram;% # # (2) If △AEP equilateral triangle, connected on BP, Proof: △APB≌ △EPC; #% # (3) If the rectangle ABCD sides AB =6, BC =4, the area required △CPF. #% # <img>

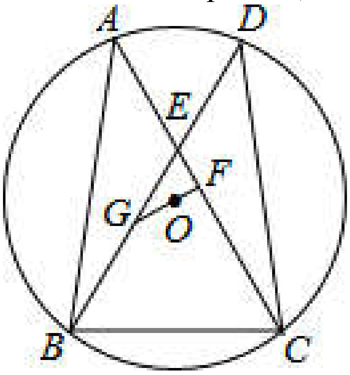


graph:
{"stem":{"pictures":[],"appliedproblems":{}},"substems":[{"substemid":"1","questionrelies":"","pictures":[{"picturename":"1000036739_Q_1.jpg","coordinates":{"A":"-9.02,3.75","B":"-9.02,-0.87","C":"-5.02,-0.87","D":"-5.02,3.75","E":"-9.02,1.44","F":"-5.02,1.44","P":"-7.02,2.59"},"collineations":{"0":"A###E###B","1":"A###D","2":"A###P###F","3":"E###P","4":"E###C","5":"B###C","6":"C###P","7":"F###D###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},{"substemid":"2","questionrelies":"1","pictures":[{"picturename":"1000036739_Q_1.jpg","coordinates":{"Q":"-8.02,0.86"},"collineations":{"0":"E###Q###C","1":"B###Q###P"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},{"substemid":"3","questionrelies":"","pictures":[{"picturename":"1000036739_Q_2.jpg","coordinates":{"A":"-9.02,5.13","B":"-9.02,-0.87","C":"-5.02,-0.87","D":"-5.02,5.13","E":"-5.02,2.13","F":"-9.02,2.13","P":"-6.14,2.97"},"collineations":{"0":"A###E###B","1":"A###D","2":"A###P###F","3":"E###P","4":"E###C","5":"B###C","6":"C###P","7":"F###D###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}}]}

NLP:

RectangleRelation{rectangle=Rectangle:ABCD},MiddlePointOfSegmentRelation{middlePoint=E,segment=AB},PointCoincidenceRelation{point1=B, point2=P},SegmentRelation:EC,LineCrossRelation[crossPoint=Optional.of(F), iLine1=CD, iLine2=AP],RegularTriangleRelation:RegularTriangle:△AEP,SegmentRelation:BP,EqualityRelation{S_△CFP=v_0},RectangleRelation{rectangle=Rectangle:ABCD},EqualityRelation{AB=6},EqualityRelation{BC=4},Calculation:(ExpressRelation:[key:]v_0),ProveConclusionRelation:[Proof: ParallelogramRelation{parallelogram=Parallelogram:AECF}],ProveConclusionRelation:[Proof: TriangleCongRelation{triangleA=△APB, triangleB=△EPC}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]S_△CFP)}

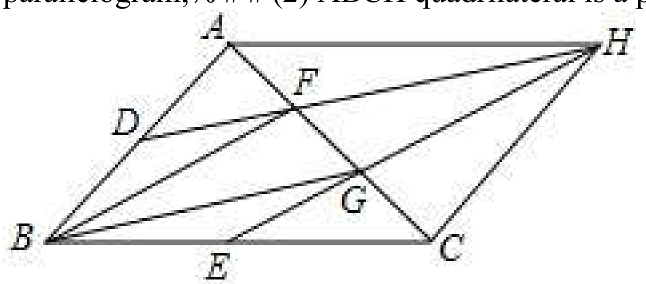
463, topic: Figure, $ \odot O $ is $ \triangle ABC $ circumcircle, chord AC BD cross at point E, connecting CD, and $ AE =DE $, $ BC =CE $ #% # (1.?) $ \angle ACB $ required degree;? #% # (2) through the point O as $ OF \perp AC $ at point F, FO extended cross-bE at point G, $ DE =3 $, $ EG =2 $, seek AB long.



graph:
{"stem":{"pictures":[{"picturename":"1000024983.jpg","coordinates":{"A":"1.00,6.93","B":"0.00,0.00","C":"5.00,0.00","D":"4.00,6.93","E":"2.50,4.33","O":"2.50,3.18"},"collineations":{"0":"B###C","1":"B###A","2":"A###E###C","3":"E###B###D","4":"C###D"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"A###C###B###D"}]}],"appliedproblems":{}},"substems":[]}

NLP: ChordOfCircleRelation{chord=BD, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, chordLength=null,straightLine=null},InscribedShapeOfCircleRelation{closedShape=△ABC, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}},LineCrossRelation[crossPoint=Optional.of(E), iLine1=BD, iLine2=AC],SegmentRelation:CD,EqualityRelation{AE=DE},EqualityRelation{BC=CE},Calculation:AngleRelation{angle=∠BCE},EqualityRelation{AB=v_0},LinePerpRelation{line1=OF, line2=AC, crossPoint=F},EqualityRelation{DE=3},EqualityRelation{EG=2},Calculation:(ExpressRelation:[key:]v_0),SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]∠BCE)},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]AB)}

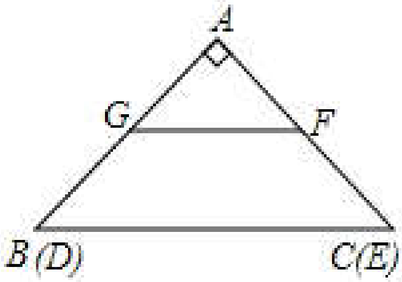
464, topic: FIG at $ \triangle ABC $, the points D, E are side AB, BC midpoint, the point F, G is an edge point of AC three aliquots, DF, EG extension lines intersect at a point H. Prove:% # # (1) FBGH quadrilateral is a parallelogram;% # # (2) ABCH quadrilateral is a parallelogram??.



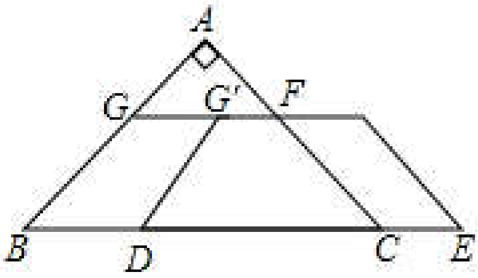
graph: {"stem":{"pictures":[{"picturename":"1000023709 .jpg","coordinates":{"A":"4.00,5.00","B":"0.00,0.00","C":"10.00,0.00","D":"2.00,2.50","E":"5.00,0.00","F":"6.00,3.33","G":"8.06,1.62","H":"14.00,5.00"},"collineations":{"0":"A###D###B","1":"A###H","2":"H###C","3":"B###F","4":"G###B","5":"F###A###G###C","6":"F###H###D","7":"E###G###H","8":"E###C###B"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleRelation:△ABC,MiddlePointOfSegmentRelation{middlePoint=D,segment=AB},MiddlePointOfSegmentRelation{middlePoint=E,segment=BC},SegmentAliquotsPointRelation{aliquotsNum='3', points=[F, G], segment=AC},LineCrossRelation [crossPoint=Optional.of(H), iLine1=DF, iLine2=EG],ProveConclusionRelation:[Proof: ParallelogramRelation{parallelogram=Parallelogram:BFHG}],ProveConclusionRelation:[Proof: ParallelogramRelation{parallelogram=Parallelogram:ABCH}]

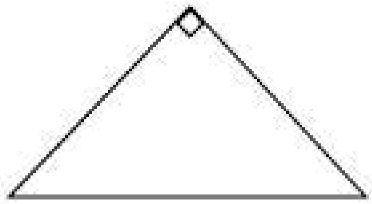
465, topic: FIG ①, the Rt △ABC is known ∠A =90 °, AB =AC, G, F, respectively, on two points AB, AC, and GF∥BC, AF =2, BG =4% # # (1) find the trapezoidal area BCFG;% # # (2) has a trapezoid DEFG BCFG trapezoid coincides fixed △ABC, the trapezoid DEFG moves to the right, until the point C coincides with point D, FIG. $ BDG'G $ ② .① quadrilateral formed after a period when the movement, $ DG⊥BG '$, BD seeking long distance movement, and determining the case $ {{G'B} ^ {2}} $ value ; ② set in motion BD length x, x, containing algebraic trial shows trapezoid DEFG and Rt △ABC portion overlapping area S #% # <img>.



图①



图②


备用图

graph: {"stem":{"pictures":[{"picturename":"1000070211_Q_1.jpg","coordinates":{"A":"2.00,3.00","B":"0.00,1.00","C":"4.00,1.00","D":"1.00,1.00","E":"5.00,1.00","F":"2.67,2.33","G":"1.33,2.33","G'":"2.33,2.33","H":"3.67,2.33"},"collineations":{"0":"G###G'###F###H","1":"A###F###C","2":"A###G###B","3":"G'###D","4":"B###D###C###E","5":"E###H","6":"D###F"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

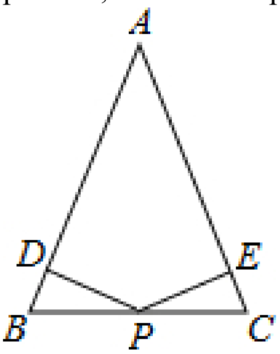
NLP: RightTriangleRelation:RightTriangle:△ABC[Optional.of(A)],EqualityRelation{∠FAG=(1/2*Pi)},EqualityRelation{AB=AC},PointOnLineRelation{point=G, line=AB, isConstant=false, extension=false},LineParallelRelation [iLine1=GF, iLine2=BC],EqualityRelation{AF=2},EqualityRelation{BG=4},TrapezoidRelation{trapezoid=Trapezoid:BCFG, isRandomOrder:true},EqualityRelation{S_BCFG=v_0},Calculation:(ExpressRelation:[key:]v_0),EqualityRelation{BD=v_1},LinePerpRelation{line1=DG, line2=BG', crossPoint=},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]S_BCFG)}

466, topic: Answer:?% # # (1) in FIG. 1, the square ABCD, the points E, F, respectively, in the BC side, a CD, $ ∠EAF =45 ° $, CD extension point G, so $ DG =BE $, link EF, AG Proof:.? $ EF =FG $ #% # (2) in FIG. 2, the right isosceles triangle ABC, $ ∠BAC =90 ° $, $ AB =AC $, point M, N on the side BC, and $ ∠MAN =45 ° $, if $ BM =1 $, $ CN =3 $, MN seeking long.

graph:
{"stem":{"pictures":[],"appliedproblems":{}},"substems":[{"substemid":"1","questionrelies":"","pictures":[{"picturename":"1000010197_Q_1.jpg","coordinates":{"A":"8.00,8.00","B":"0.00,8.00","C":"0.00,0.00","D":"8.00,0.00","E":"0.00,6.00","F":"3.20,0.00","G":"10.00,0.00"},"collineations":{"0":"A###B","1":"A###D","2":"A###G","3":"C###D###F###G","4":"A###E","5":"A###F","6":"B###C###E","7":"E###F"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},{"substemid":"2","questionrelies":"","pictures":[{"picturename":"1000010197_Q_2.jpg","coordinates":{"A":"8.00,8.00","B":"0.00,8.00","C":"0.00,0.00","M":"8.00,0.00","N":"0.00,6.00"},"collineations":{"0":"A###B","1":"A###C","2":"A###M","3":"B###M###N###C","4":"A###N"},"variable-equals":{},"circles":[]}],"appliedproblems":{}}]}

NLP: (ExpressRelation:[key:]1),SquareRelation{square=Square:ABCD},PointOnLineRelation{point=E, line=BC, isConstant=false, extension=false},PointOnLineRelation{point=F, line=CD, isConstant=false, extension=false},EqualityRelation{∠EAF=(1/4*Pi)},PointOnLineRelation{point=G, line=CD, isConstant=false, extension=true},EqualityRelation{DG=BE},SegmentRelation:EF,SegmentRelation:AG,EqualityRelation{MN=v_0},(ExpressRelation:[key:]2),IsoscelesRightTriangleRelation:IsoscelesRightTriangle:IsoscelesTriangle:△ABC[Optional.of(B)][Optional.of(B)],EqualityRelation{∠BAC=(1/2*Pi)},EqualityRelation{AB=AC},PointOnLineRelation{point=M, line=BC, isConstant=false, extension=false},PointOnLineRelation{point=N, line=BC, isConstant=false, extension=false},EqualityRelation{∠MAN=(1/4*Pi)},EqualityRelation{BM=1},EqualityRelation{CN=3},Calculation:(ExpressRelation:[key:]v_0),ProveConclusionRelation:[Proof: EqualityRelation{EF=FG}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]MN)}

467, topic: Given: As shown in the isosceles △ABC, AB =AC, P is the midpoint of BC, PD⊥AB at point D, PE⊥AC at point E, Proof: . PD =PE #% # <img>



graph:
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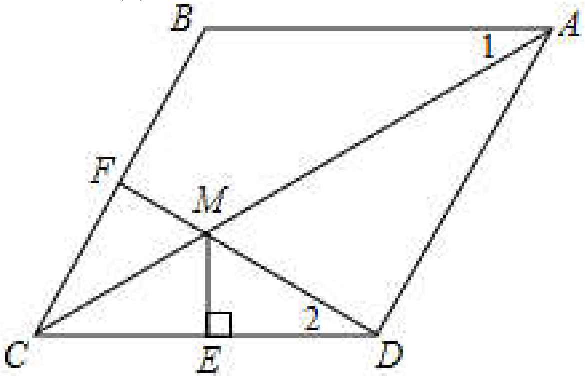
NLP:
IsoscelesTriangleRelation:IsoscelesTriangle:△ABC[Optional.of(B)],EqualityRelation{AB=AC},MiddlePointOfSegmentRelation{middlePoint=P,segment=BC},LinePerpRelation{line1=PD, line2=AB, crossPoint=D},LinePerpRelation{line1=PE, line2=AC, crossPoint=E},ProveConclusionRelation:[Proof: EqualityRelation{DP=EP}]

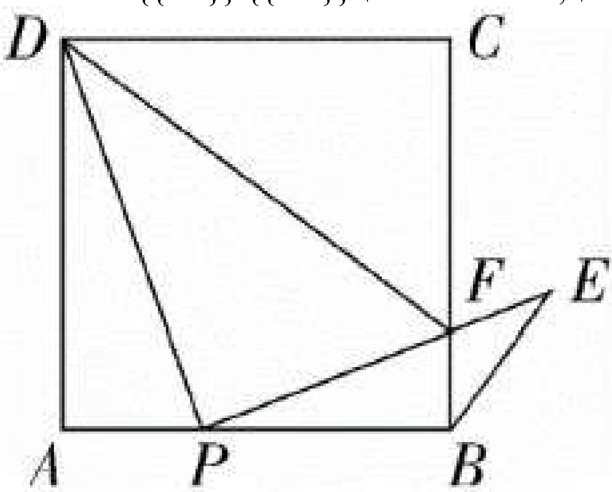
468, topic: FIG, ABCD in the diamond, the point F as the midpoint of the side BC, DF diagonal AC at point M, M through the point to point as ME⊥CD E, ∠1 =∠2 #. % # (1) if CE =1, the required length BC;% # # (2) Proof: AM =DF + ME #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000034573_Q_1.jpg","coordinates":{"A":"3.67,1.16","B":"-0.33,1.16","C":"-2.33,-2.30","D":"1.67,-2.30","E":"-0.33,-2.30","F":"-1.33,-0.57","M":"-0.33,-1.15"},"collineations":{"0":"B###A","1":"B###F###C","2":"F###M###D","3":"A###M###C","4":"C###E###D","5":"M###E","6":"D###A"},"variable-equals":{"0":"∠1=∠BAC","1":"∠2=∠FDC"},"circles":[]}],"appliedproblems":{}},"substems":[{"substemid":"1","questionrelies":"","pictures":[],"appliedproblems":{}},{"substemid":"2","questionrelies":"","pictures":[],"appliedproblems":{}}]}

NLP:
RhombusRelation{rhombus=Rhombus:ABCD},MiddlePointOfSegmentRelation{middlePoint=F,segment=BC},LineCrossRelation [crossPoint=Optional.of(M), iLine1=DF, iLine2=AC],LinePerpRelation{line1=ME, line2=CD, crossPoint=E},EqualityRelation{∠BAM=∠EDM},EqualityRelation{BC=v_0},EqualityRelation{CE=1},Calculation:(ExpressRelation:[key:]v_0),SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]BC)},ProveConclusionRelation:[Proof: EqualityRelation{AM=DF+EM}]

469, topic: FIG known point P is a square ABCD edge point (not the points A, B overlap), and PD PD connecting point P is rotated clockwise about $ 90 ° $ obtained line PE, PE side BC in cross .? point F, link BE, DF #% # (1) Proof: $ ∠ADP =∠EPB $; #% # (2) seeking $ ∠CBE $ degree; #% # (3) when $ \?? value frac {{AP}} {{AB}} $ is the number, $ △PFD ~ △BFP $? Please explain the reason.

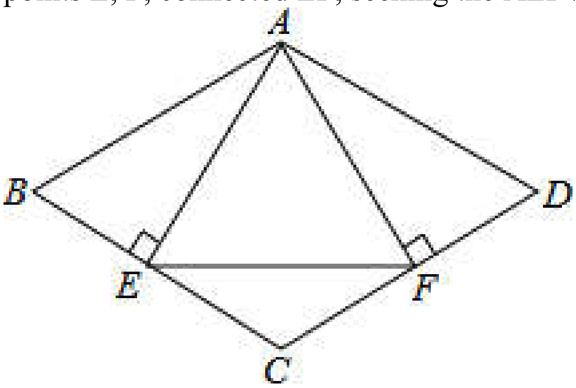


graph:

{"stem":{"pictures":[{"picturename":"1000004773_Q_1.jpg","coordinates":{"A":"-6.56,0.21","B":"-0.95,0.21","C":"-0.95,5.82","D":"-6.56,5.82","E":"1.32,2.49","F":"-0.95,1.56","P":"-4.29,0.21"},"collineations":{"0":"P###F###E","1":"A###P###B","2":"C###F###B","3":"A###D","4":"D###C","5":"D###F","6":"D###P","7":"B###E"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: PointRelation: A, PointRelation: B, SegmentRelation: PD, RotateRelation {preData =PD, afterData =PE, rotatePoint =P, rotateDegree ='(1/2 * Pi)', rotateDirection =CLOCKWISE}, LineCrossRelation [crossPoint =Optional .of (F), iLine1 =PE, iLine2 =BC], SegmentRelation: BE, SegmentRelation: DF, the size of the required angle: AngleRelation {angle =∠EBF}, evaluation (size) :(ExpressRelation: [key:] ((AP) / (AB))), ProveConclusionRelation: [Proof: EqualityRelation {∠ADP =∠BPF}], SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] ∠EBF)}, SolutionConclusionRelation {relation =evaluation (size) :(ExpressRelation: [key:] ((AP) / (AB)))}

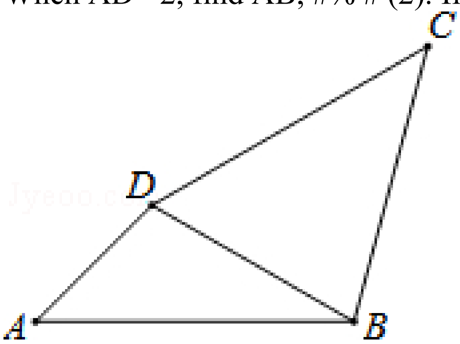
470, topic: FIG., In the diamond ABCD, AB =4, ∠B =60 °, AE⊥BC, AF⊥CD, respectively pedal points E, F, connected EF, seeking the AEF #% △area. # <img>



graph:
{"stem":{"pictures":[{"picturename":"918C95650B6448828F001FA56A4C2C05.jpg","coordinates":{"A":"-12.00,8.00","B":"-15.46,6.00","C":"-12.00,4.00","D":"-8.54,6.00","E":"-13.73,5.00","F":"-10.27,5.00"},"collineations":{"0":"A###B","1":"D###A","2":"E###A","3":"F###A","4":"B###E###C","5":"D###F###C","6":"F###E"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: EqualityRelation{S_△AEF=v_0},RhombusRelation{rhombus=Rhombus:ABCD},EqualityRelation{AB=4},EqualityRelation{∠ABE=(1/3*Pi)},LinePerpRelation{line1=AE, line2=BC, crossPoint=E},LinePerpRelation{line1=AF, line2=CD, crossPoint=F},SegmentRelation:EF,Calculation:(ExpressRelation:[key:]v_0),SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]S_△AEF)}

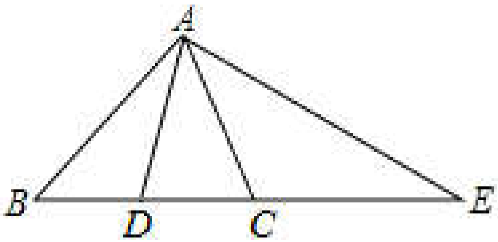
471, topic: As shown, the quadrilateral ABCD, ∠A =∠C =45 °, ∠ADB =∠ABC =105 ° #% # (1) When AD =2, find AB; #% # (2). If $ AB + CD =2 {\ sqrt {3}} + 2 $, seeking AB. #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000027196_Q_1.jpg","coordinates":{"A":"1.00,1.00","B":"7.00,1.00","C":"8.39,6.20","D":"3.20,3.20"},"collineations":{"0":"A###B","1":"A###D","2":"B###D","3":"B###C","4":"D###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: known conditions QuadrilateralRelation {quadrilateral =ABCD}, MultiEqualityRelation [multiExpressCompare =∠BAD =∠BCD =(1/4 * Pi), originExpressRelationList =[], keyWord =null, result =null], MultiEqualityRelation [multiExpressCompare =∠ADB =∠ABC =(7/12 * Pi), originExpressRelationList =[], keyWord =null, result =null], EqualityRelation {AD =2}, evaluation (size) :(ExpressRelation: [key:] AB), EqualityRelation {AB + CD =2 * ((3 ^ (1/2))) + 2}, evaluation (size) :(ExpressRelation: [key:] AB), SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation : [key:] AB)}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] AB)}

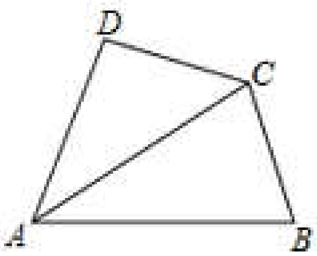
472, topic: As shown, the AD is a center line of △ABC, the point E on the extension line of the BC, CE =AB, ∠BAC =∠BCA #% # Proof:. AE =2AD #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"97CACE941AD44F868A2DAC8CED773397.jpg","coordinates":{"A":"-10.38,6.02","B":"-13.00,3.00","C":"-9.00,3.00","D":"-11.00,3.00","E":"-5.00,3.00"},"collineations":{"0":"A###B","1":"D###A","2":"A###C","3":"A###E","4":"B###C###D###E"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleRelation:△ABC,PointOnLineRelation{point=E, line=BC, isConstant=false, extension=true},EqualityRelation{CE=AB},EqualityRelation{∠BAC=∠ACD},MidianLineOfTriangleRelation{midianLine=AD, triangle=△ABC, top=A, bottom=BC},ProveConclusionRelation:[Proof: EqualityRelation{AE=2*AD}]

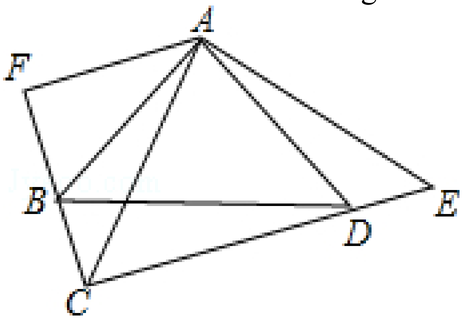
473, topic: quadrangle ABCD is known AB =a, AD =b, and a＞b, bisecting diagonals AC ∠BAD, DC =BC, Proof: ∠B + ∠D =180 ° #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000040373_Q_1.jpg","coordinates":{"A":"-5.95,-2.51","B":"-0.95,-2.51","C":"-1.80,0.58","D":"-4.52,2.27"},"collineations":{"0":"A###C","1":"A###D","2":"A###B","3":"B###C","4":"C###D"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: Know:QuadrilateralRelation{quadrilateral=ABCD},EqualityRelation{AB=a},EqualityRelation{AD=b},Ine qualityRelation{a>b},AngleBisectorRelation{line=AC,angle=∠BAD, angle1=∠BAC, angle2=∠CAD},EqualityRelation{CD=BC},ProveConclusionRelation:[Proof: EqualityRelation{∠ABC+∠ADC=(Pi)}]

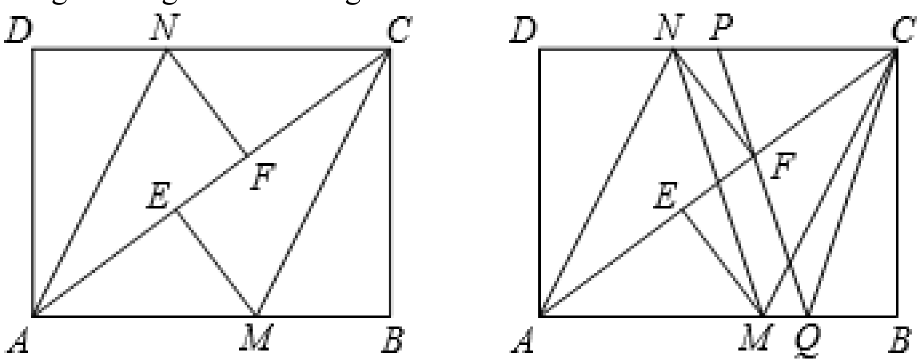
474, topic: FIG, △ABD and △ACE are right isosceles triangle, the apex A at right angles to the public, through the A post for AF vertical extension line CB CB in F #% # (1) Prove:. △ABC≌ △ADE; #% # (2) Prove:. CE =2AF #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000041867_Q_1.jpg","coordinates":{"A":"-4.00,5.00","B":"-6.00,3.00","C":"-4.87,1.19","D":"-2.00,3.00","E":"0.20,4.14","F":"-6.34,3.53"},"collineations":{"0":"A###B","1":"B###D","2":"D###A","3":"A###C","4":"C###D###E","5":"E###A","6":"A###F","7":"F###B###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP:
IsoscelesRightTriangleRelation:IsoscelesRightTriangle:IsoscelesTriangle:△ABD[Optional.of(A)][Optional.of(A)],IsoscelesRightTriangleRelation:IsoscelesRightTriangle:IsoscelesTriangle:△ACE[Optional.of(A)][Optional.of(A)],LinePerpRelation{line1=AF, line2=CB, crossPoint=F},LineCrossRelation [crossPoint=Optional.of(F), iLine1=AF, iLine2=CB],PointOnLineRelation{point=A, line=AF, isConstant=false, extension=false},ProveConclusionRelation:[Proof: TriangleCongRelation{triangleA=△ABC, triangleB=△ADE}],ProveConclusionRelation:[Proof: EqualityRelation{CE=2*AF}]

475, topic: Figure (1), in the rectangle ABCD, the ∠B, ∠D are folded, so that the point B, D point E falls exactly on the diagonal line AC, F, the folds are CM ., AN #% # (1) Proof: ∠DAN =∠BCM; #% # (2) connect MF, NE, proved MFNE quadrilateral is a parallelogram; #% # (3) P, Q are rectangular sides CD , two points on AB, connected PQ, CQ, MN, as shown in (2), if PQ =CQ, PQ∥MN, and AB =4cm, BC =3cm, seeking PC length. #% # <img >



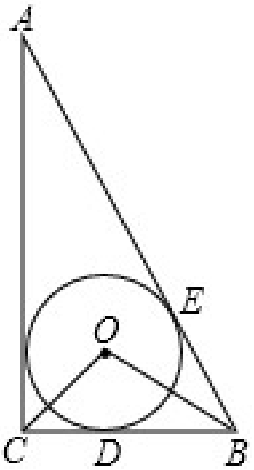
图（1）   图（2）

graph:

{"stem":{"pictures":[{"picturename":"1000050139_Q_1.jpg","coordinates":{"A":"-9.00,2.00","B":"-4.00,2.00","C":"-4.00,6.00","D":"-9.00,6.00","E":"-7.02,3.58","F":"-5.79,4.60","M":"-5.90,2.00","N":"-7.09,6.00"},"collineations":{"0":"A###M###B","1":"D###N###C","2":"A###E###F###C","3":"A###D","4":"A###N","5":"N###F","6":"E###M","7":"M###C","8":"B###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[{"substemid":"3","questionrelies":"","pictures":[{"picturename":"1000001262_Q_1.jpg","coordinates":{"P":"-6.16,6.00","Q":"-5.08,2.00"},"collineations":{"0":"M###N","1":"Q###C","2":"P###F###Q"},"variable-equals":{},"circles":[]}],"appliedproblems":{}}]}

NLP: RectangleRelation{rectangle=Rectangle:ABCD},PointRelation:B,PointOnLineRelation{point=D, line=AC, isConstant=false, extension=false},PointCoincidenceRelation{point1=D, point2=E},PointRelation:F,SegmentRelation:MF,SegmentRelation:NE,EqualityRelation{CP=v_0},PointRelation:P,SegmentRelation:PQ,SegmentRelation:CQ,SegmentRelation:MN,EqualityRelation{PQ=CQ},LineParallelRelation [iLine1=PQ, iLine2=MN],EqualityRelation{AB=4},EqualityRelation{BC=3},Calculation:(ExpressRelation:[key:]v_0),ProveConclusionRelation:[Proof: EqualityRelation{∠DAN=∠BCM}],ProveConclusionRelation:[Proof: ParallelogramRelation{parallelogram=Parallelogram:EMFN}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]CP)}

476, topic: FIG known in $ Rt △ABC $, $ ∠ACB =90 ° $, $ ⊙O $ endo $ Rt △ABC $ circle with a radius of 1, E, D is tangent point If $ ∠BOC =105 ° $, AE seeking long.

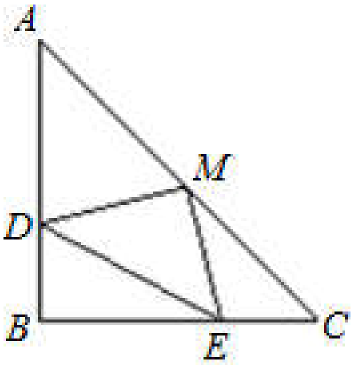


graph:

{"stem":{"pictures":[{"picturename":"1000008280_Q_1.jpg","coordinates":{"A":"-2.73,4.73","B":"0.00,0.00","C":"-2.73,0.00","E":"-0.87,1.50","D":"-1.73,0.00","O":"-1.73,1.00"},"collineations":{"0":"A###C","1":"A###B###E","2":"O###C","3":"O###B","4":"C###D###B"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"D###E"}]}],"appliedproblems":{}},"substems":[]}

NLP: CircumscribedShapeOfCircleRelation:△ABC/Circle[⊙O_0]{center=O_0, analytic=(x-x_O_0)^2+(y-y_O_0)^2=r_O_0^2}Points:[],EqualityRelation{AE=v_1},RightTriangleRelation: RightTriangle:△ABC[Optional.of(C)],EqualityRelation{∠ACD=(1/2*Pi)},RadiusRelation{radius=null, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, length=Express:[1]},PointRelation:E,PointRelation:D,EqualityRelation{∠BOC=(7/12*Pi)},Calculation:(ExpressRelation:[key:]v_1),SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]AE)}

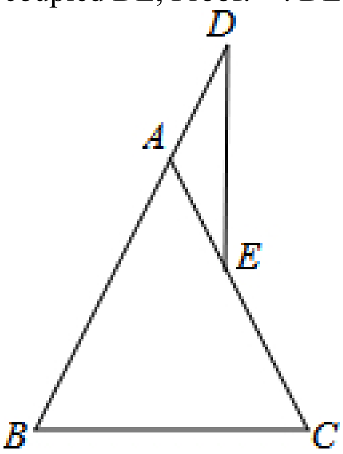
477, topic: As shown in the △ABC, ∠B =90 °, AB =BC, BD =CE, M is the midpoint of the side AC Proof: △DEM isosceles #% # <img>.



graph: {"stem":{"pictures":[{"picturename":"1000052825_Q_1.jpg","coordinates":{"A":"-10.72,8.63","B":"-10.66,0.85","C":"-2.88,0.90","D":"-10.68,2.83","E":"-4.87,0.89","M":"-6.80,4.76"},"collineations":{"0":"D###M","1":"M###E","2":"D###E","3":"A###D###B","4":"B###E###C","5":"C###M###A"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleRelation:△ABC,EqualityRelation{∠DBE=(1/2*Pi)},EqualityRelation{AB=BC},EqualityRelation{BD=CE},MiddlePointOfSegmentRelation{middlePoint=M,segment=AC},ProveConclusionRelation:[IsoscelesTriangleRelation:IsoscelesTriangle:△DEM[Optional.of(M)]]

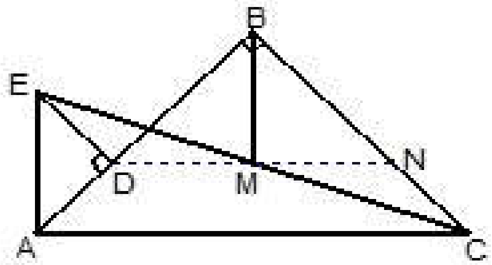
478, topic: Given: As shown in the △ABC, AB =AC, E on AC, D on the extension line of BA, AD =AE, coupled DE, Proof: . DE⊥BC #% # <img >



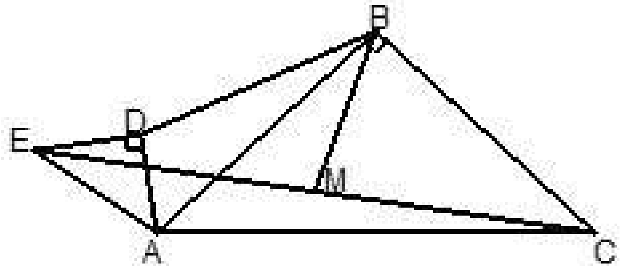
graph: {"stem":{"pictures":[{"picturename":"1000040425_Q_1.jpg","coordinates":{"A":"0.00,3.00","B":"-1.56,0.00","C":"1.56,0.00","D":"0.63,4.20","E":"0.63,1.80"},"collineations":{"0":"D###A###B","1":"B###C","2":"C###E###A","3":"D###E"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleRelation:△ABC,EqualityRelation{AB=AC},PointOnLineRelation{point=E, line=AC, isConstant=false, extension=false},PointOnLineRelation{point=D, line=BA, isConstant=false, extension=true},EqualityRelation{AD=AE},SegmentRelation:DE,ProveConclusionRelation:[Proof: LinePerpRelation{line1=DE, line2=BC, crossPoint=}]

479, topic: known:. $ △ABC $ and $ △ADE $ are right isosceles triangle, $ ∠ABC =∠ADE =90 ° $, point M is the midpoint of CE, connected to BM (1) in FIG. ① , point D on AB, DM connection, and extend DM BC at point N. Proof: $ △EDM≌ △CNM $; under the condition (1), the BD and tried to explore the BM% # # (2) What kind of relationship exists between the number and give proof; #% # (3) as shown in ② , the point D is not AB, (2) the conclusions also set it? If true, please prove; if not satisfied, the reasons.



图①

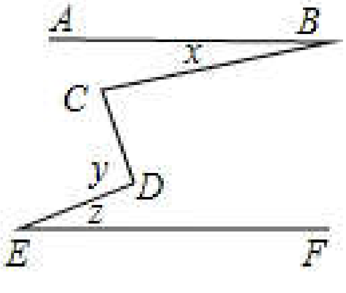


图②

graph:
{"stem":{"pictures":[],"appliedproblems":{}},"substems":[{"substemid":"1","questionrelies":"","pictures":[{"picturename":"1000027835_Q_1.jpg","coordinates":{"A":"-4.00,0.00","B":"0.00,4.00","C":"4.00,0.00","D":"-2.00,2.00","E":"-4.00,4.00","M":"0.00,2.00","N":"2.00,2.00"},"collineations":{"0":"B###D###A","1":"B###N###C","2":"M###B","3":"D###M###N","4":"E###D","5":"C###M###E"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},{"substemid":"2","questionrelies":"","pictures":[{"picturename":"3A_20(2).jpg","coordinates":{"A":"-4.00,0.00","B":"0.00,4.00","C":"4.00,0.00","D":"-5.00,3.00","E":"-8.00,2.00","M":"-2.00,1.00"},"collineations":{"0":"B###D","1":"E###D","2":"A###D","3":"A###B","4":"A###C","5":"E###A","6":"B###M","7":"C###B"},"variable-equals":{},"circles":[]}],"appliedproblems":{}}]}

NLP:
IsoscelesRightTriangleRelation:IsoscelesRightTriangle:IsoscelesTriangle:△ABC[Optional.of(B)][Optional.of(B)],IsoscelesRightTriangleRelation:IsoscelesRightTriangle:IsoscelesTriangle:△ADE[Optional.of(D)][Optional.of(D)],MultiEqualityRelation [multiExpressCompare=∠DBN=∠ADE=(1/2*Pi), originExpressRelationList=[], keyWord=null, result=null],MiddlePointOfSegmentRelation{middlePoint=M,segment=CE},SegmentRelation:BM,PointOnLineRelation{point=D, line=AB, isConstant=false, extension=false},LineCrossRelation [crossPoint=Optional.of(N), iLine1=BC, iLine2=DM],Calculation:(ExpressRelation:[key:](BD/BM)),NegativeRelation{relation=PointOnLineRelation{point=D, line=AB, isConstant=false, extension=false}},ProveConclusionRelation:[Proof: TriangleCongRelation{triangleA=△EDM, triangleB=△CNM}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:](BD/BM))}

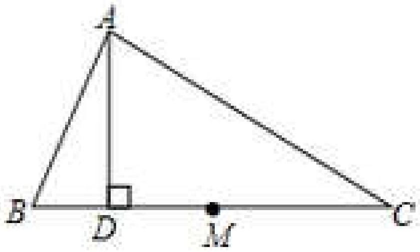
480, topic: FIG known $ AB // EF $, $ ∠C =90 ° $, Proof: $ x + y-z =90 ° $.



graph:
{"stem":{"pictures":[{"picturename":"1000022479_Q_1.jpg","coordinates":{"A":"-10.00,8.00","B":"0.00,8.00","C":"-3.00,5.00","D":"0.00,2.00","E":"-10.00,0.00","F":"4.00,0.00"},"collineations":{"0":"A###B","1":"B###C","2":"D###C","3":"D###E","4":"E###F"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: LineParallelRelation [iLine1=AB, iLine2=EF],EqualityRelation{∠BCD=(1/2*Pi)},ProveConclusionRelation:[Proof: EqualityRelation{x+y-z=(1/2*Pi)}]

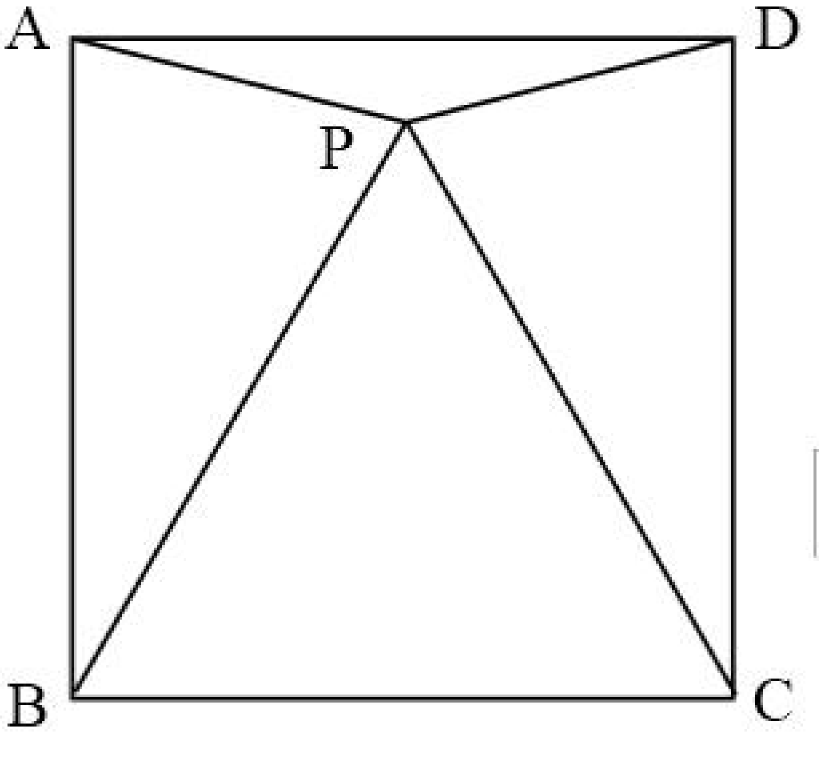
481, topic: As shown in the triangle ABC, $ \ angle B =2 \ angle C $, AD is the height of the triangle, point M is the midpoint of the side BC Proof: $ DM =\ frac {1} {2 } AB $. #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000040694_Q_1.jpg","coordinates":{"A":"-9.03,4.35","B":"-11.00,2.00","C":"-4.00,2.00","D":"-9.03,2.00","M":"-7.50,2.00"},"collineations":{"0":"A###D","1":"A###B","2":"A###C","3":"B###D###M###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleRelation:△ABC,EqualityRelation{∠ABD=2*∠ACM},MiddlePointOfSegmentRelation{middlePoint=M,segment=BC},LinePerpRelation{line1=AD, line2=BD, crossPoint=D},ProveConclusionRelation:[Proof: EqualityRelation{DM=(1/2)*AB}]

482, topic: Given: As shown, P is the square ABCD point, $ \ angle PAD =\ angle PDA =15 ^ \ circ $ #% # Proof: $ \ Vartriangle PBC $ is an equilateral triangle.

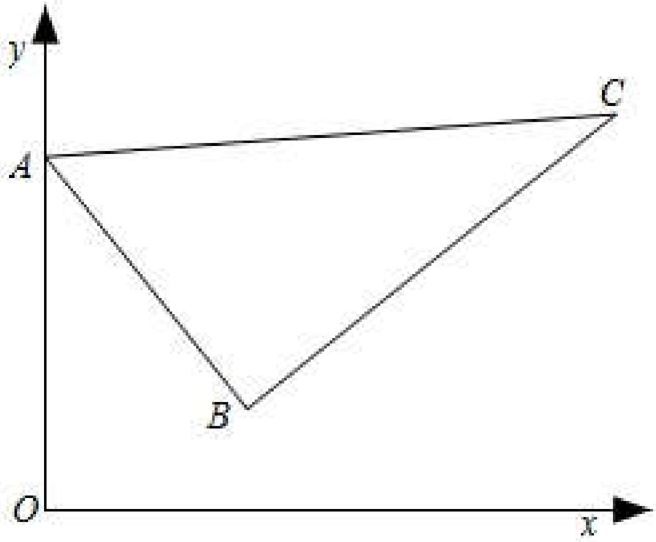


graph:
{"stem":{"pictures":[{"picturename":"1000010818_Q_1.jpg","coordinates":{"A":"0.00,6.00","B":"0.00,0.00","C":"6.00,0.00","D":"6.00,6.00","P":"3.00,5.20"},"collineations":{"0":"B###A","1":"C###B","2":"C###D","3":"D###A","4":"P###A","5":"P###D","6":"B###P","7":"C###P"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: PositionOfPoint2RegionRelation{point=P, region=EnclosedRegionRelation{name=ABCD, closedShape=Square:ABCD}, position=inner},MultiEqualityRelation [multiExpressCompare=∠DAP=∠

ADP=(1/12*Pi), originExpressRelationList=[], keyWord=null, result=null],ProveConclusionRelation:[Proof: RegularTriangleRelation:RegularTriangle:△PBC]

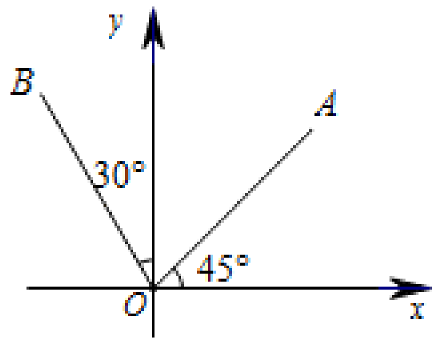
483, topic: FIG, △ABC isosceles right on the Cartesian coordinate system, where ∠B =90 °, coordinates A (0,10), B (8,4), the length AB required and point C . #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000080426_Q_1.jpg","coordinates":{"A":"0.00,10.00","B":"8.00,4.00","C":"14.00,12.00"},"collineations":{"0":"A###B","1":"A###C","2":"B###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: EqualityRelation {AB =v_0}, IsoscelesRightTriangleRelation: IsoscelesRightTriangle: IsoscelesTriangle: △ABC [Optional.of (B)] [Optional.of (B)], EqualityRelation {∠ABC =(1/2 * Pi)}, PointRelation: A (0,10), PointRelation: B (8,4), evaluation (size) :(ExpressRelation: [key:] v_0 [v_0 =v_0]), coordinates PointRelation: C, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] AB)}, SolutionConclusionRelation {relation =coordinates PointRelation: C}

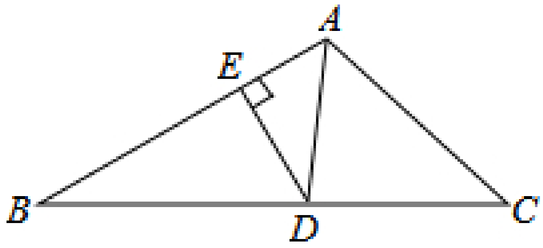
484, topic: As shown in the Cartesian coordinate system, the length of the line segment OA is 6, the length of the OB 8, find points A, B of the coordinate #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000082372_Q_1.jpg","coordinates":{"A":"2.12,2.12","B":"-2.00,3.46","O":"0.00,0.00"},"collineations":{"0":"A###O","1":"B###O"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: CoorSysTypeRelation [name =xOy, types =Cartesian coordinate system], EqualityRelation {AO =6}, EqualityRelation {BO =8}, the coordinates PointRelation: A, coordinates PointRelation: B, SolutionConclusionRelation {relation =coordinates PointRelation: A}, SolutionConclusionRelation {relation =coordinates PointRelation: B}

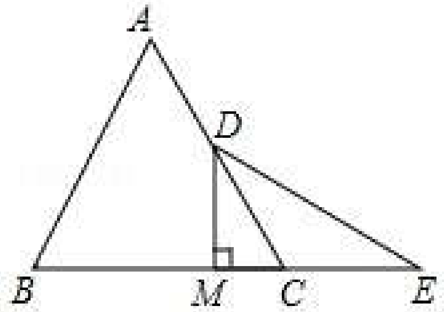
485, topic: FIG, AD is ∠BAC △ABC in the angle bisector, DE⊥AB at point E, $ {{S} _ {\ vartriangle ABC}} =7 $, DE =2, AB =4, AC is the length required. #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"B8F2039A4B2644D7B9C33F3803D7F646.jpg","coordinates":{"A":"-11.00,6.00","B":"-14.11,3.49","C":"-9.36,3.49","D":"-11.40,3.49","E":"-12.47,4.82"},"collineations":{"0":"B###E###A","1":"A###C","2":"A###D","3":"D###E","4":"B###C###D"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: EqualityRelation{AC=v_0},AngleBisectorRelation{line=AD,angle=∠CAE, angle1=∠CAD, angle2=∠DAE},TriangleRelation:△ABC,LinePerpRelation{line1=DE, line2=AB, crossPoint=E},EqualityRelation{S_△ABC)=7},EqualityRelation{DE=2},EqualityRelation{AB=4},Calculation:(ExpressRelation:[key:]v_0),AngleBisectorRelation{line=AD,angle=∠CAE, angle1=∠CAD, angle2=∠DAE},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]AC)}

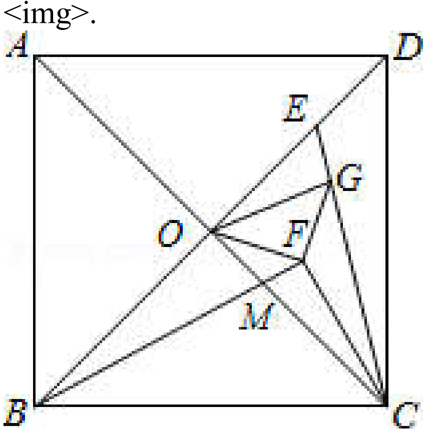
486, topic: FIG known equilateral triangle ABC, D is the midpoint of AC, E is the point of an extension line BC, and CE =CD, DM⊥BC, to M. confirmation Pedal: M is BE midpoint. #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000027156_Q_1.jpg"#%#"coordinates":{"A":"3.00#%#5.20"#%#"B":"0.00#%#0.00"#%#"C":"6.00#%#0.00"#%#"D":"4.50#%#2.60"#%#"E":"9.00#%#0.00"#%#"M":"4.50#%#0.00"}#%#"collineations":{"0":"A###B"#%#"1":"C###M###B###E"#%#"2":"D###M"#%#"3":"D###E"#%#"4":"A###D###C"}#%#"variable-equals":{}#%#"circles":[]}]#%#"appliedproblems":{}}#%#"substems":[]}

NLP: RegularTriangleRelation:RegularTriangle:△ABC,MiddlePointOfSegmentRelation{middlePoint=D,segment=AC},PointOnLineRelation{point=E, line=BC, isConstant=false, extension=true},EqualityRelation{CE=CD},LinePerpRelation{line1=DM, line2=BC, crossPoint=M},ProveConclusionRelation:[Proof: MiddlePointOfSegmentRelation{middlePoint=M,segment=BE}]

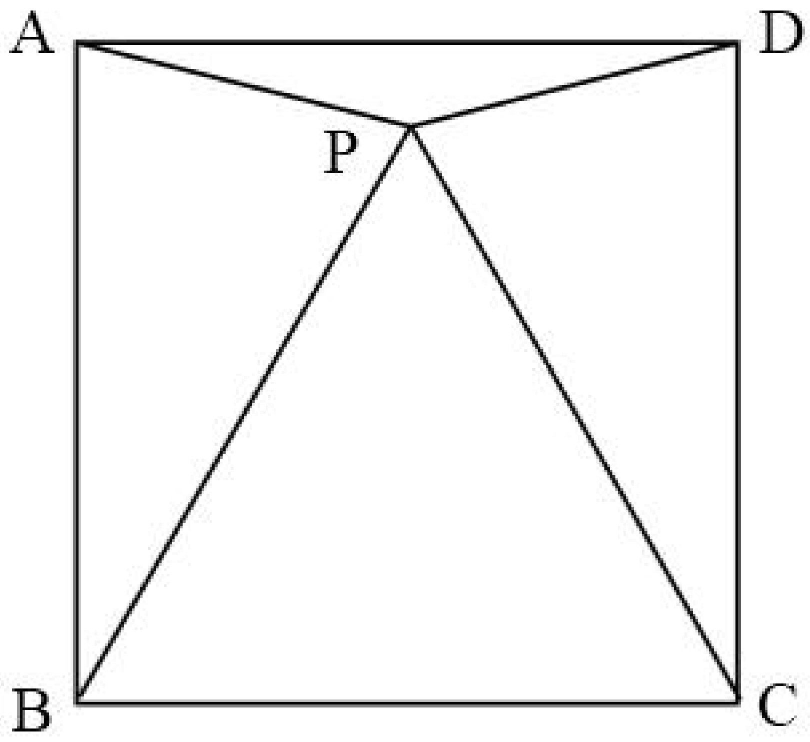
487, topic: FIG square ABCD at point O. diagonal point E a point on line segment DO, point F is connected to the CE ∠OCE bisector point, and CO and BF⊥CF at point M. point G is a point on the line segment CE, and CO =CG #% # (1) if oF =4, seeking FG is long; #% # (2) Prove:. BF =OG + CF #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000041984_Q_1.jpg","coordinates":{"A":"-14.00,5.00","B":"-14.03,1.14","C":"-10.17,1.11","D":"-10.14,4.97","E":"-10.96,4.16","F":"-11.12,2.79","G":"-10.85,3.75","M":"-11.57,2.53","O":"-12.08,3.05"},"collineations":{"0":"A###O###M###C","1":"D###E###O###B","2":"E###G###C","3":"B###M###F","4":"O###F","5":"F###G","6":"A###D","7":"A###B","8":"B###C","9":"D###C","10":"O###G"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: AngleBisectorRelation{line=M_0N_0,angle=∠GCM, angle1=∠GCM_0, angle2=∠MCM_0},SquareRelation{square=Square:ABCDintersection : O},PointOnLineRelation{point=E, line=DO, isConstant=false, extension=false},SegmentRelation:CE,LinePerpRelation{line1=BF, line2=CF, crossPoint=F},LineCrossRelation [crossPoint=Optional.of(M), iLine1=BF, iLine2=CO],PointOnLineRelation{point=G, line=CE, isConstant=false, extension=false},EqualityRelation{CO=CG},EqualityRelation{FG=v_1},EqualityRelation{FO=4},Calculation:(ExpressRelation:[key:]v_1),SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]FG)},ProveConclusionRelation:[Proof: EqualityRelation{BF=GO+CF}]

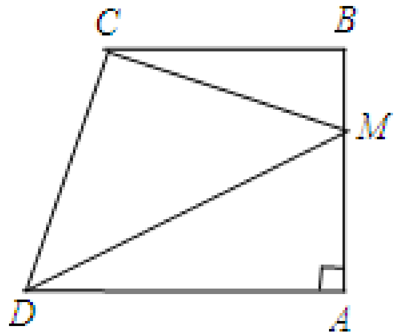
488, topic: Given: As shown, P is the square ABCD point, $ \ angle PAD =\ angle PDA =15 ^ \ circ $ #% # Proof: $ \ Vartriangle PBC $ is an equilateral triangle.



graph:
{"stem":{"pictures":[{"picturename":"1000010818_Q_1.jpg","coordinates":{"A":"0.00,6.00","B":"0.00,0.00","C":"6.00,0.00","D":"6.00,6.00","P":"3.00,5.20"},"collineations":{"0":"B###A","1":"C###B","2":"C###D","3":"D###A","4":"P###A","5":"P###D","6":"B###P","7":"C###P"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: PositionOfPoint2RegionRelation{point=P, region=EnclosedRegionRelation{name=ABCD, closedShape=Square:ABCD}, position=inner},MultiEqualityRelation [multiExpressCompare=∠DAP=∠ADP=(1/12*Pi), originExpressRelationList=[], keyWord=null, result=null],ProveConclusionRelation:[Proof: RegularTriangleRelation:RegularTriangle:△PBC]

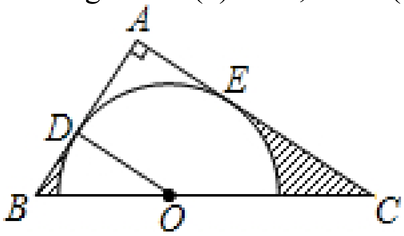
489, topic: As shown in the quadrilateral ABCD is known AD∥BC, ∠BAD =90 °, the point M is a point AB, is connected CM, DM #% # (1) Prove:. ∠CMD =∠BCM + ∠ the ADM; #% # (2) when AD =8, AM =6, $ CD =CM =5 \ sqrt {2} $, seeking quadrilateral AMCD area; at #% # (3) the case (2), long link AC, the AC requirements. #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000062466_Q_1.jpg","coordinates":{"A":"8.00,0.00","B":"8.00,7.00","C":"1.00,7.00","D":"0.00,0.00","M":"8.00,6.00"},"collineations":{"0":"B###A###M","1":"B###C","2":"D###C","3":"C###M","4":"A###D","5":"M###D"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: known conditions QuadrilateralRelation {quadrilateral =ABCD}, LineParallelRelation [iLine1 =AD, iLine2 =BC], EqualityRelation {∠DAM =(1/2 * Pi)}, PointOnLineRelation {point =M, line =AB, isConstant =false , extension =false}, SegmentRelation: CM, SegmentRelation: DM, known conditions QuadrilateralRelation {quadrilateral =ADCM}, EqualityRelation {S_ADCM =v_0}, EqualityRelation {AD =8}, EqualityRelation {AM =6}, MultiEqualityRelation [multiExpressCompare =CD =CM =5 * (2 ^ (1/2)), originExpressRelationList =[], keyWord =null, result =null], evaluated (size) :(ExpressRelation: [key:] v_0), EqualityRelation {AC =v_1 }, SegmentRelation: AC, evaluation (size) :(ExpressRelation: [key:] v_1), ProveConclusionRelation: [Proof: EqualityRelation {∠CMD =∠BCM + ∠ADM}], SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] S_ADCM)}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] AC)}

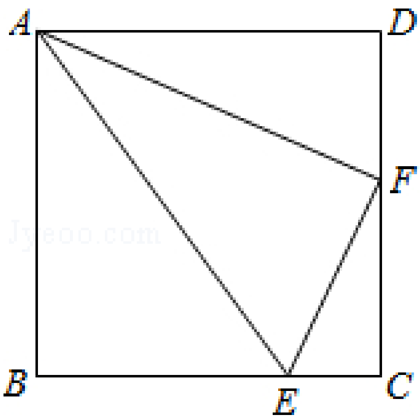
490, topic: As shown in the △ABC, ∠A =90 °, O BC is the edge point to the center O of the semicircular respectively AB, AC tangential to the side D, E points, OD is connected. known BD =2, AD =3, seeking: #% # (1) tanC; #% # (2) in two portions hatched in FIG area and #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000060798_Q_1.jpg","coordinates":{"A":"4.75,5.05","B":"2.61,1.00","C":"12.43,1.00","D":"3.35,2.40","E":"7.40,3.65","O":"6.00,1.00"},"collineations":{"0":"A###D###B","1":"B###O###C","2":"C###E###A","3":"O###D"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"D###E"}]}],"appliedproblems":{}},"substems":[]}

NLP: CircleCenterRelation{point=O, conic=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}},TriangleRelation:△ABC,EqualityRelation{∠DAE=(1/2*Pi)},PointOnLineRelation{point=O, line=BC, isConstant=false, extension=false},LineContactCircleRelation{line=AB, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, contactPoint=Optional.of(D), outpoint=Optional.absent()},LineContactCircleRelation{line=AC, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, contactPoint=Optional.of(E), outpoint=Optional.absent()},SegmentRelation:OD,EqualityRelation{BD=2},EqualityRelation{AD=3},Calculation:(ExpressRelation:[key:]tan(∠ECO)),SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]tan(∠ECO))}

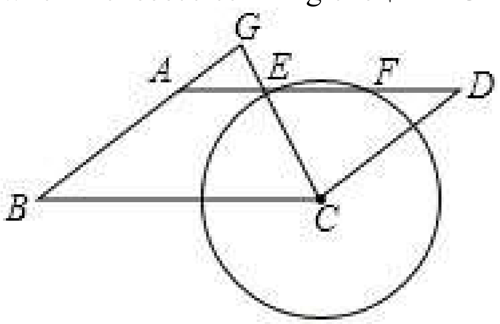
491, topic: As shown in the square ABCD, F is the midpoint of CD, E is the edge of the BC bit, AF and bisecting ∠DAE #% # (1) If the edge length of the square ABCD 4, BE =3 , seeking long-EF #% # (2) Prove:?. AE =EC + CD #% # <img>



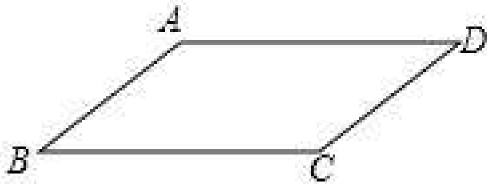
graph:
{"stem":{"pictures":[{"picturename":"1000041832_Q_1.jpg","coordinates":{"A":"0.00,4.00","B":"0.00,0.00","C":"4.00,0.00","D":"4.00,4.00","E":"3.00,0.00","F":"4.00,2.00"},"collineations":{"0":"A###B","1":"B###E###C","2":"C###F###D","3":"D###A","4":"A###E","5":"E###F","6":"F###A"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP:
SquareRelation{square=Square:ABCD},MiddlePointOfSegmentRelation{middlePoint=F,segment=CD},PointOnLineRelation{point=E, line=BC, isConstant=false, extension=false},AngleBisectorRelation{line=AF,angle=∠DAE, angle1=∠DAF, angle2=∠EAF},EqualityRelation{EF=v_0},SquareRelation{square=Square:ABCD},EqualityRelation{AB=4},EqualityRelation{BE=3},Calculation:(ExpressRelation:[key:]v_0),SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]EF)},ProveConclusionRelation:[Proof: EqualityRelation{AE=CE+CD}]

492, topic: FIG., It is known in the parallelogram ABCD, $ AB =5 $, $ BC =8 $, $ \ cos B =\ frac {4} {5} $, P is a point on the moving side BC point CP to a circle C with radius edges AD at point E, F (point F to the right of point E), and CE-ray radiation at point BA G.?#%#(1) passes when the circle C when the points a, find the CP length;? #% # (2) is connected AP, when $ AP // CG $, seeking EF chord length;? #% # (3) when the isosceles triangle is $ △AGE $, the radius of circular long C. <img>



①



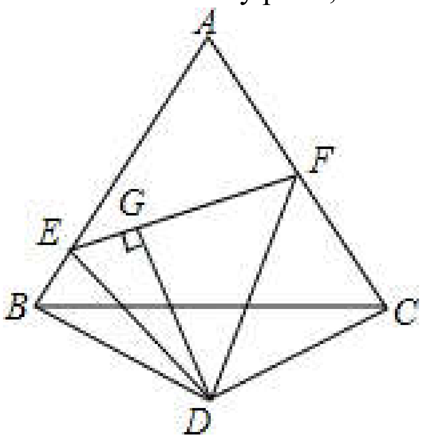
②

graph:
{"stem":{"pictures":[{"picturename":"1000008154_Q_1.jpg","coordinates":{"A":"1.56,4.75","B":"0.00,0.00","C":"8.00,0.00","D":"9.56,4.75"},"collineations":{"0":"B###A","1":"C###D","2":"A###D"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: RadiusRelation{radius=CP, circle=Circle[⊙C]{center=C, analytic=(x-x_C)^2+(y-y_C)^2=r_C^2}, length=null},PositionRelation [F在E的右方],ParallelogramRelation{parallelogram=Parallelogram:ABCD},EqualityRelation{AB=5},EqualityRelation{BC=8},EqualityRelation{cos(∠B)=(4/5)},PointOnLineRelation{point=P, line=BC, isConstant=false,

extension=false},LineCrossCircleRelation{line=AD, circle=⊙C, crossPoints=[E, F], crossPointNum=2},LineCrossRelation [crossPoint=Optional.of(G), iLine1=CE, iLine2=BA],EqualityRelation{CP=v_0},PointOnCircleRelation{circle=Circle[⊙C]{center=C, analytic=(x-x_C)^2+(y-y_C)^2=r_C^2}, points=[A]},Calculation:(ExpressRelation:[key:]v_0),SegmentRelation:AP,LineParallelRelation [iLine1=AP, iLine2=CG],Calculation:(ExpressRelation:[key:]EF),ChordOfCircleRelation{chord=EF, circle=Circle[⊙C]{center=C, analytic=(x-x_C)^2+(y-y_C)^2=r_C^2}, chordLength=null,straightLine=null},IsoscelesTriangleRelation:IsoscelesTriangle:△AGE[Optional.absent()],圆的半径：CircleRelation{circle=Circle[⊙C]{center=C, analytic=(x-x_C)^2+(y-y_C)^2=r_C^2}},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]CP)},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]EF)},SolutionConclusionRelation{relation=圆的半径：CircleRelation{circle=Circle[⊙C]{center=C, analytic=(x-x_C)^2+(y-y_C)^2=r_C^2}}}

493, topic: △ABC is known as an equilateral triangle, △BCD isosceles triangle, ∠BDC =120 °, E, F are AB and AC any point, and ∠EDF =60 °, DG⊥EF, Proof: △BED≌ △GED. #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"C2CB0F00182247F8A6326917D981A306.jpg","coordinates":{"A":"-11.50,9.33","B":"-14.00,5.00","C":"-9.00,5.00","D":"-11.50,3.56","E":"-13.57,5.75","F":"-9.93,6.61","G":"-12.10,6.10"},"collineations":{"0":"B###E###A","1":"A###F###C","2":"B###D","3":"B###C","4":"C###D","5":"D###E","6":"D###F","7":"D###G","8":"F###E###G"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP:
RegularTriangleRelation:RegularTriangle:△ABC,RegularTriangleRelation:RegularTriangle:△BCD,EqualityRelation{∠BDC=(2/3*Pi)},PointOnLineRelation{point=E, line=AB, isConstant=false, extension=false},PointOnLineRelation{point=F, line=AC, isConstant=false, extension=false},EqualityRelation{∠EDF=(1/3*Pi)},LinePerpRelation{line1=DG, line2=EF, crossPoint=G},ProveConclusionRelation:[Proof: TriangleCongRelation{triangleA=△BED, triangleB=△GED}]

494, topic: #% # (1) in FIG. 1, a known ∠ACB =∠DCE =90 °, AC =BC =6, CD =CE, AE =3, ∠CAE =45 °, the length AD seeking; #% # (2) in FIG. 2, known ∠ACB =∠DCE =90 °, ∠ABC =∠CED =∠CAE =30 °, AC =3, AE =8, AD long seeking. #% # <Img>

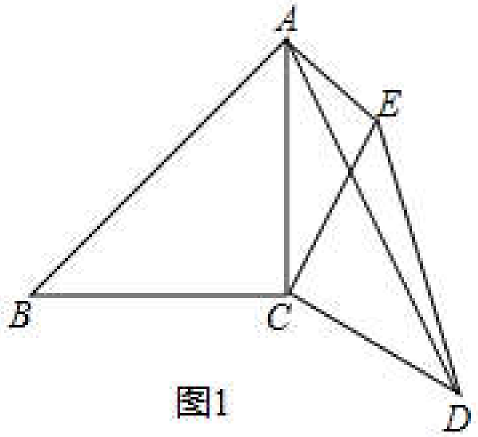


图1

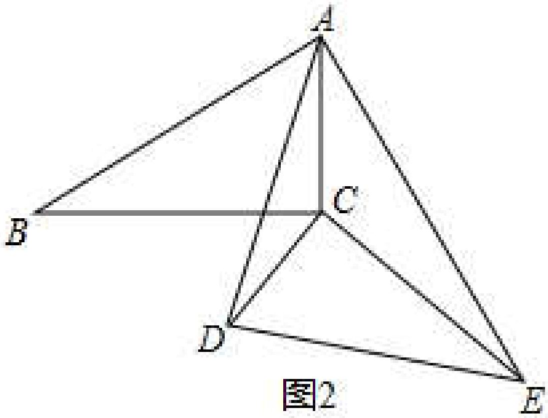
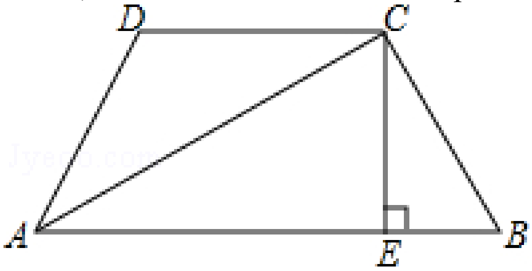


图2

graph:
{"stem":{"pictures":[],"appliedproblems":{}},"substems":[{"substemid":"1","questionrelies":"","pictures":[{"picturename":"C66C1EFB965F4C9EA1CA822B7AA1004B_1.jpg","coordinates":{"A":"-8.00,9.00","B":"-14.00,3.00","C":"-8.00,3.00","D":"-4.12,0.88","E":"-5.88,6.88"},"collineations":{"0":"B###A","1":"A###D","2":"C###A","3":"A###E","4":"B###C","5":"C###D","6":"C###E","7":"E###D"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},{"substemid":"2","questionrelies":"","pictures":[{"picturename":"C66C1EFB965F4C9EA1CA822B7AA1004B_2.jpg","coordinates":{"A":"-10.00,7.00","B":"-15.20,4.00","C":"-10.00,4.00","D":"-12.27,1.69","E":"-6.00,0.07"},"collineations":{"0":"B###A","1":"A###D","2":"C###A","3":"A###E","4":"B###C","5":"C###D","6":"C###E","7":"E###D"},"variable-equals":{},"circles":[]}],"appliedproblems":{}}]}

NLP: EqualityRelation{AD=v_0},(ExpressRelation:[key:]1),MultiEqualityRelation [multiExpressCompare=∠ACB=∠DCE=(1/2*Pi), originExpressRelationList=[], keyWord=null, result=null],MultiEqualityRelation [multiExpressCompare=AC=BC=6, originExpressRelationList=[], keyWord=null, result=null],EqualityRelation{CD=CE},EqualityRelation{AE=3},EqualityRelation{∠CAE=(1/4*Pi)},Calculation:(ExpressRelation:[key:]v_0),EqualityRelation{AD=v_1},(ExpressRelation:[key:]2),MultiEqualityRelation [multiExpressCompare=∠ACB=∠DCE=(1/2*Pi), originExpressRelationList=[], keyWord=null, result=null],MultiEqualityRelation [multiExpressCompare=∠ABC=∠CED=∠CAE=(1/6*Pi), originExpressRelationList=[], keyWord=null, result=null],EqualityRelation{AC=3},EqualityRelation{AE=8},Calculation:(ExpressRelation:[key:]v_1),SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]AD)},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]AD)}

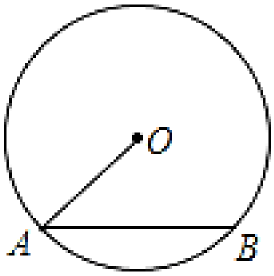
495, topic: As shown, the quadrangle ABCD, the AC bisecting ∠BAD, CE⊥AB at point E, AD + AB =2AE, and then ∠B ∠ADC complementary Why #% # <img>.?



graph:
{"stem":{"pictures":[{"picturename":"1000031277_Q_1.jpg","coordinates":{"A":"-10.50,2.00","B":"0.00,2.00","C":"-3.00,6.00","D":"-7.99,5.74","E":"-3.00,2.00"},"collineations":{"0":"A###D","1":"A###E###B","2":"A###C","3":"B###C","4":"D###C","5":"E###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: Know:QuadrilateralRelation{quadrilateral=ABCD},AngleBisectorRelation{line=AC,angle=∠DAE, angle1=∠CAD, angle2=∠CAE},LinePerpRelation{line1=CE, line2=AB, crossPoint=E},EqualityRelation{AD+AB=2*AE},AngleSupplementRelation:∠CBE/∠ADC

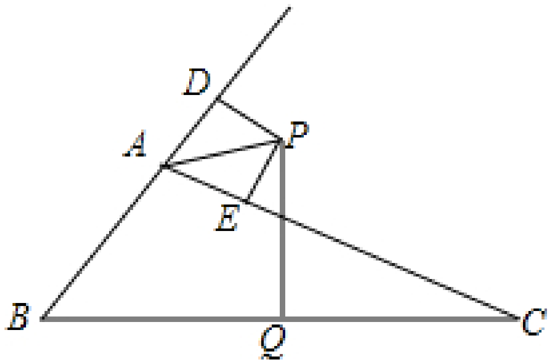
496, topic: FIG known ⊙O radius of 30mm, the chord AB =36mm, find the point O to the cosine of the distance and ∠OAB of AB #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000083361_Q_1.jpg","coordinates":{"A":"-1.77,-2.42","B":"1.83,-2.38","O":"0.00,0.00"},"collineations":{"0":"A###O","1":"A###B"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"A###B"}]}],"appliedproblems":{}},"substems":[]}

NLP: RadiusRelation {radius =null, circle =Circle [⊙O] {center =O, analytic =(x-x_O) ^ 2 + (y-y_O) ^ 2 =r_O ^ 2}, length =Express: [30] }, ChordOfCircleRelation {chord =AB, circle =Circle [⊙O] {center =O, analytic =(x-x_O) ^ 2 + (y-y_O) ^ 2 =r_O ^ 2}, chordLength =null, straightLine =null }, EqualityRelation {AB =36}, the distance, seeking distance: PointToLineDistanceRelation {point =O, line =AB, distance =null}, find the value of the cosine of the angle: CalculateTrigonometricOfAngleRelation {angle =∠BAO, trigonometricType =COS}, SolutionConclusionRelation {relation =distance, seeking distance: PointToLineDistanceRelation {point =O, line =AB, distance =null}}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] cos (∠BAO))}

497, topic: FIG, △ABC ∠DAC exterior angle bisector perpendicular bisector BC cross edge at point P, PD⊥AB in D, PE⊥AC in E #% # (1) Prove:. BD =CE ;. #% # (2) If AB =6cm, AC =10cm, long seeking AD #% # <img>

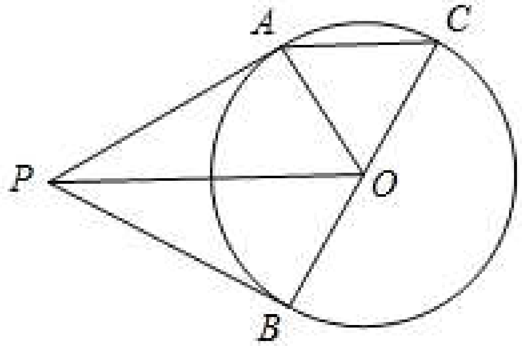


graph:
{"stem":{"pictures":[{"picturename":"1000031011_Q_1.jpg","coordinates":{"A":"-11.00,4.00","B":"-13.00,2.00","C":"-7.00,2.00","D":"-10.42,4.58","E":"-10.26,3.63","P":"-10.00,4.16","Q":"-10.00,2.00"},"collineations":{"0":"D###A###B","1":"A###E###C","2":"B###Q###C","3":"P###Q","4":"P###D","5":"P###E","6":"A###P"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: LinePerpRelation{line1=PD, line2=AB, crossPoint=D},LinePerpRelation{line1=PE, line2=AC, crossPoint=E},EqualityRelation{AD=v_1},EqualityRelation{AB=6},EqualityRelation{AC=10},Calculation

:(ExpressRelation:[key:]v_1),ProveConclusionRelation:[Proof: EqualityRelation{BD=CE}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]AD)}

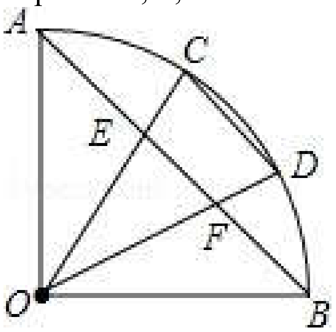
498, topic: Given: As shown, P is a point outside ⊙O, PA, PB to ⊙O two tangent lines, A and B as the cutoff point, BC confirmation diameter:.. AC // OP #% # <img >



graph:
{"stem":{"pictures":[{"picturename":"1000083452_Q_1.jpg","coordinates":{"A":"-0.38,2.14","B":"0.09,-1.56","C":"1.34,2.36","P":"-3.84,-0.32","O":"0.71,0.40"},"collineations":{"0":"O###A","1":"O###P","2":"A###C","3":"A###P","4":"B###P","5":"B###O###C"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"C###A###B"}]}],"appliedproblems":{}},"substems":[]}

NLP: PointOutCircleRelation{point=Pcurve=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, points=[P]},LineContactCircleRelation{line=PA, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, contactPoint=Optional.of(A), outpoint=Optional.of(P)},LineContactCircleRelation{line=PB, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, contactPoint=Optional.of(B), outpoint=Optional.of(P)},DiameterRelation{diameter=BC, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, length=null},ProveConclusionRelation:[Proof: LineParallelRelation [iLine1=AC, iLine2=OP]]

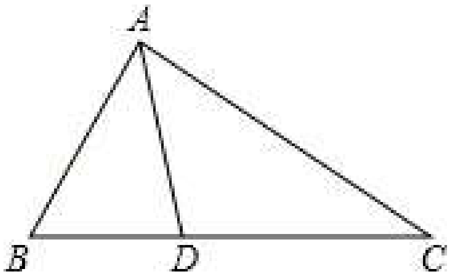
499, topic: FIG, ∠AOB =90 °, C, D is $ \ widehat {AB} $ three equant, AB respectively cross OC, OD at points E, F, Prove:. AE =CD #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000052548_Q_1.jpg","coordinates":{"A":"-8.15,3.47","B":"-5.23,1.00","C":"-6.77,3.22","D":"-5.70,2.32","E":"-7.08,2.56","F":"-6.30,1.90","O":"-7.92,0.77"},"collineations":{"0":"O###A","1":"O###B","2":"C###D","3":"O###E###C","4":"O###F###D","5":"A###E###F###B"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"A###B###C###D"}]}],"appliedproblems":{}},"substems":[]}

NLP: EqualityRelation{∠AOB=(1/2*Pi)},PointRelation:C,LineCrossRelation [crossPoint=Optional.of(E), iLine1=AB, iLine2=OC],LineCrossRelation [crossPoint=Optional.of(F), iLine1=AB, iLine2=OD],ProveConclusionRelation:[Proof: EqualityRelation{AE=CD}]

500, topic: As shown in the $ △ABC $, $ ∠ABC =2∠C $, AD bisects $ ∠BAC $ BC at point D. Proof: $ AB + BD =AC $.



graph:
{"stem":{"pictures":[{"picturename":"1000026825_Q_1.jpg","coordinates":{"A":"0.00,5.00","B":"-3.00,1.00","C":"5.00,1.00","D":"0.51,1.00"},"collineations":{"0":"B###C###D","1":"C###A","2":"A###B","3":"A###D"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

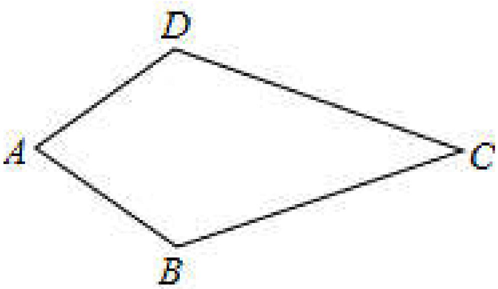
NLP: TriangleRelation:△ABC,EqualityRelation{∠ABD=2*∠ACD},AngleBisectorRelation{line=AD,angle=∠BAC, angle1=∠BAD, angle2=∠CAD},LineCrossRelation [crossPoint=Optional.of(D), iLine1=AD, iLine2=BC],ProveConclusionRelation:[Proof: EqualityRelation{AB+BD=AC}]

501, topic: As shown in $ \ vartriangle ABC $ in, $ \ angle ABC =90 {} ^ \ circ $, the midpoint of the center O AB, OA is the radius of a circle in cross point of AC D, E is BC midpoint connected DE, OE Proof: $ B {{C} ^ {2}} =CD \ cdot 2OE $ #% # <img>.

graph:

NLP: MiddlePointOfSegmentRelation{middlePoint=O,segment=AB},TriangleRelation:△ABC,EqualityRelation{∠ABC=(1/2*Pi)},CircleCenterRelation{point=O, conic=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}},MiddlePointOfSegmentRelation{middlePoint=E,segment=BC},SegmentRelation:DE,SegmentRelation:OE,ProveConclusionRelation:[Proof: EqualityRelation{(BC)^2=CD*2*EO}]

502, topic: As shown, the quadrilateral ABCD, AB =AD, CB =CD, again described ∠B =∠D #% # <img>.

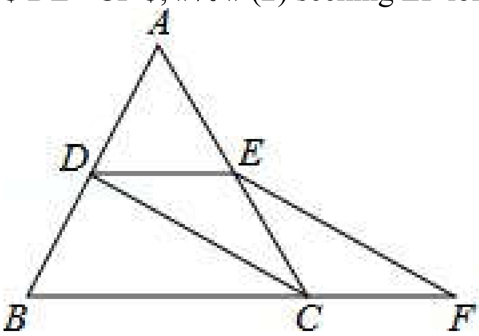


graph:

{"stem":{"pictures":[{"picturename":"1000029143_Q_1.jpg","coordinates":{"A":"0.00,0.00","B":"2.00,-2.00","C":"6.00,0.00","D":"2.00,2.00"},"collineations":{"0":"D###A","1":"C###D","2":"A###B","3":"B###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: known conditions QuadrilateralRelation {quadrilateral =ABCD}, EqualityRelation {AB =AD}, EqualityRelation {BC =CD}, ProveConclusionRelation: [Proof: EqualityRelation {∠ABC =∠ADC}]

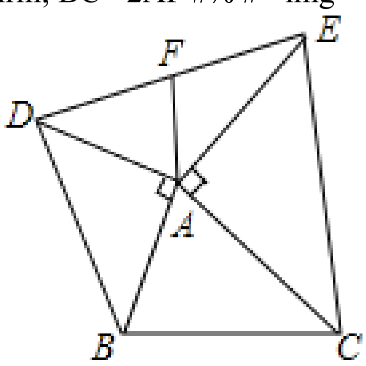
503, topic: As shown, the ABC $ $ equilateral triangle of side length is 2, D, E are AB, the midpoint of the AC, BC extended to a point F., So $ CF =\ frac {1} {2} BC $ connected CD and EF.?#%#(1) Prove:? $ DE =CF $; #% # (2) seeking EF long.



graph:
{"stem":{"pictures":[{"picturename":"1000026643_Q_1.jpg","coordinates":{"A":"-2.50,4.33","B":"-5.00,0.00","C":"0.00,0.00","D":"-3.75,2.17","E":"-1.25,2.17","F":"2.50,0.00"},"collineations":{"0":"C###B###F","1":"A###B###D","2":"C###E###A","3":"D###C","4":"D###E","5":"E###F"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: RegularTriangleRelation:RegularTriangle:△ABC,EqualityRelation{AB=2},MiddlePointOfSegmentRelation{middlePoint=D,segment=AB},MiddlePointOfSegmentRelation{middlePoint=E,segment=AC},PointOnLineRelation{point=F, line=BC, isConstant=false, extension=true},EqualityRelation{CF=(1/2)*BC},SegmentRelation:CD,SegmentRelation:EF,EqualityRelation{EF=v_0},Calculation:(ExpressRelation:[key:]v_0),ProveConclusionRelation:[Proof: EqualityRelation{DE=CF}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]EF)}

504, topic:. As shown, AB =AD, AC =AE, ∠BAD =∠CAE =90 °, the midpoint of DE point F, to confirm; BC =2AF #% # <img>

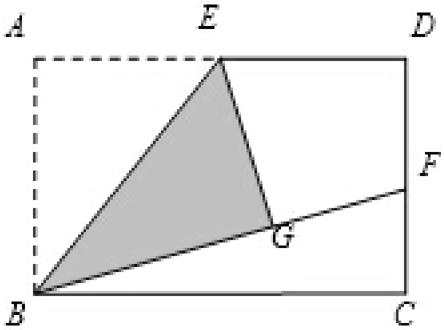


graph:
{"stem":{"pictures":[{"picturename":"E076CDA9E8264D5B93D9239E86CD9B98.jpg","coordinates":{"A":"-12.00,6.00","B":"-13.00,4.00","C":"-10.00,4.00","D":"-14.00,7.00","E":"-10.00,8.00","F":"-12.00,7.50"},"collineations":{"0":"B###A","1":"A###D","2":"E###A","3":"A###C","4":"A###F","5":"B###C","6":"E###C","7":"B###D","8":"D###E###F"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":

[]}

NLP: EqualityRelation{AB=AD},EqualityRelation{AC=AE},MultiEqualityRelation [multiExpressCompare=∠BAD=∠CAE=(1/2*Pi), originExpressRelationList=[], keyWord=null, result=null],MiddlePointOfSegmentRelation{middlePoint=F,segment=DE},ProveConclusionRelation:[Proof: EqualityRelation{BC=2*AF}]

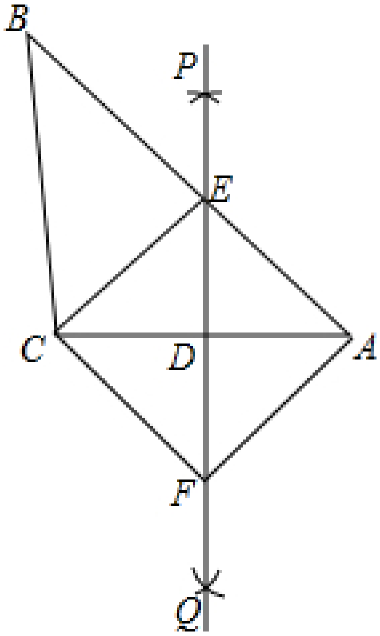
505, topic: as shown, the rectangular ABCD, the point E is the midpoint of AD, the $ △ABE obtained after $ △GBE $ $ BE folded edge, and at point G inside the rectangle ABCD, the extension post DC BG at point F.?#%#(1) connected EF, Proof: ? $ GF =DF $ #% # (2) to maintain constant conditions in question, if $ DF =\ frac {1} {2} DC $ Prove:? $ \ frac {AD} {AB} =\ sqrt {2} $ #% # (3) to maintain constant conditions in question, if $ DF =\ frac {1} {n} DC $, Research calculated: $ \ frac {AD} {AB} value of $.



graph:
{"stem":{"pictures":[{"picturename":"1000027805_Q_1.jpg","coordinates":{"A":"0.00,3.00","B":"0.00,0.00","C":"4.24,0.00","D":"4.24,3.00","E":"2.12,3.00","F":"4.24,1.50","G":"2.83,1.00"},"collineations":{"0":"B###G###F","1":"D###F###C","2":"A###E###D","3":"B###A","4":"E###B","5":"E###G","6":"B###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP:
RectangleRelation{rectangle=Rectangle:ABCD},MiddlePointOfSegmentRelation{middlePoint=E,segment=AD},SymmetricRelation{preData=△ABE,afterData=△GBE,symmetric=BE, pivot=},PositionOfPoint2RegionRelation{point=G, region=EnclosedRegionRelation{name=ABCD, closedShape=Rectangle:ABCD}, position=inner},SegmentRelation:EF,EqualityRelation{DF=(1/2)*CD},EqualityRelation{DF=(1/n)*CD},Calculation:(ExpressRelation:[key:]((AD)/(AB))),ProveConclusionRelation:[Proof: EqualityRelation{FG=DF}],ProveConclusionRelation:[Proof: EqualityRelation{((AD)/(AB))=(2^(1/2))}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]((AD)/(AB)))}

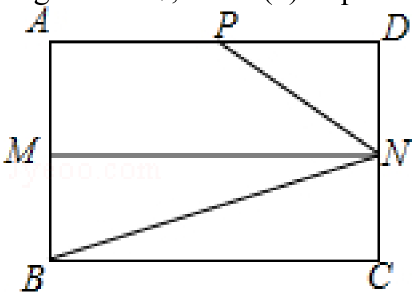
506, topic: FIG known △ABC, PQ perpendicular bisector of straight line AC, and the side AB at point E, is connected CE, through the cross-point C as CF // BA at point F. PQ, connected AF #% # (1.) Proof: $ \ vartriangle AED \ cong \ vartriangle CFD $; #% # (2) Proof: quadrilateral AECF a diamond; #% # (3) if AD =3, AE =5, the diamond AECF area is how much? #% # <Img>



graph: {"stem":{"pictures":[{"picturename":"1000041053_Q_1.jpg","coordinates":{"A":"-3.00,3.00","B":"-9.54,11.72","C":"-9.00,3.00","D":"-6.00,3.00","E":"-6.00,7.00","F":"-6.00,-1.00","P":"-6.00,9.00","Q":"-6.00,-2.00"},"collineations":{"0":"P###E###D###F###Q","1":"C###D###A","2":"C###F","3":"A###F","4":"A###E###B","5":"B###C","6":"E###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleRelation:△ABC,MiddlePerpendicularRelation [iLine1=PQ, iLine2=AC, crossPoint=Optional.of(D)],SegmentRelation:AB,LineCrossRelation [crossPoint=Optional.of(E), iLine1=PQ, iLine2=AB],SegmentRelation:CE,PointOnLineRelation{point=C, line=CF, isConstant=false, extension=false},LineParallelRelation [iLine1=CF, iLine2=BA],LineCrossRelation [crossPoint=Optional.of(F), iLine1=CF, iLine2=PQ],SegmentRelation:AF,RhombusRelation{rhombus=Rhombus:AECF},EqualityRelation{S_AECF=v_0},EqualityRelation{AD=3},EqualityRelation{AE=5},Calculation:(ExpressRelation:[key:]v_0),ProveConclusionRelation:[Proof: TriangleCongRelation{triangleA=△AED, triangleB=△CFD}],ProveConclusionRelation:[Proof: RhombusRelation{rhombus=Rhombus:AECF}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]S_AECF)}

507, topic: As shown in the rectangle ABCD, AB =4, AD =6, M, N, respectively, is the midpoint of AB, CD, P is a point on the AD, and $ \ angle PNB =3 \ angle CBN $. #% # (1) Proof: $ \ angle PNM =2 \ angle CBN $; #% # (2) required a long line segment AP #% # <img>.

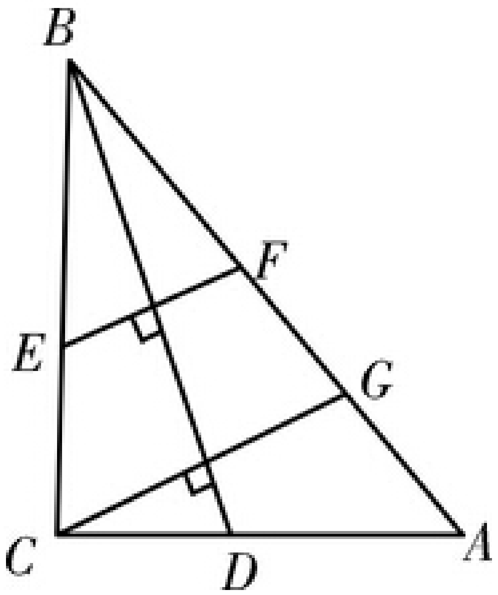


graph: {"stem":{"pictures":[{"picturename":"1000041068_Q_1.jpg","coordinates":{"A":"-9.00,5.00","B":"-9.00,1.00","C":"-3.00,1.00","D":"-3.00,5.00","M":"-9.00,3.00","N":"-3.00,3.00","P":"-5.67,5.00"},"collineations":{"0":"A###P###D","1":"A###M###B","2":"D###N###C","3":"C###B","4":"M###N","5":"N###P","6":"B#

##N"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP:
RectangleRelation{rectangle=Rectangle:ABCD},EqualityRelation{AB=4},EqualityRelation{AD=6},MiddlePointOfSegmentRelation{middlePoint=M,segment=AB},MiddlePointOfSegmentRelation{middlePoint=N, segment=CD},PointOnLineRelation{point=P, line=AD, isConstant=false, extension=false},EqualityRelation{∠BNP=3*∠CBN},EqualityRelation{AP=v_0},Calculation:(ExpressRelation:[key:]v_0),ProveConclusionRelation:[Proof: EqualityRelation{∠MNP=2*∠CBN}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]AP)}

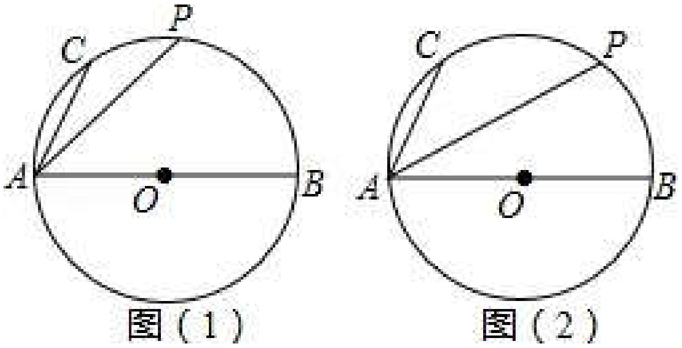
508, topic: FIG, isosceles right $ △ABC, ∠ACB =90 °, CE =CD, EF⊥BD $ to pay $ AB $ $ F, CG⊥ BD $ $ AB to pay $ $ $ verify G. $:. AG =GF $



graph:
{"stem":{"pictures":[{"picturename":"1000023380_Q_1.jpg","coordinates":{"A":"6.00,0.00","B":"0.00,6.00","C":"0.00,0.00","D":"3.00,0.00","E":"0.00,3.00","F":"2.00,4.00","G":"4.00,2.00"},"collineations":{"0":"C###E###B","1":"A###D###C","2":"F###G###B###A","3":"B###D","4":"F###E","5":"C###G"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP:
IsoscelesRightTriangleRelation:IsoscelesRightTriangle:IsoscelesTriangle:△ABC[Optional.of(C)][Optional.of(C)],EqualityRelation{∠DCE=(1/2*Pi)},EqualityRelation{CE=CD},LinePerpRelation{line1=EF, line2=BD, crossPoint=},LineCrossRelation [crossPoint=Optional.of(F), iLine1=EF, iLine2=AB],LinePerpRelation{line1=CG, line2=BD, crossPoint=},LineCrossRelation [crossPoint=Optional.of(G), iLine1=CG, iLine2=AB],ProveConclusionRelation:[Proof: EqualityRelation{AG=FG}]

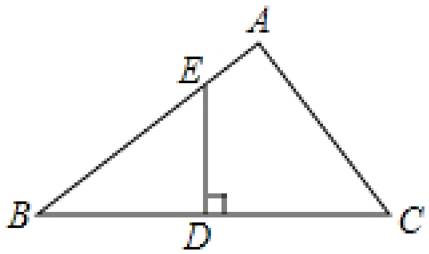
509, topic: FIG, AB is the diameter of $ ⊙O $, C, P is $ \ widehat {AB} $ two points, $ AB =13 $, $ AC =5 $. (1) As (1), if the point P is a $ \ widehat {AB} $ midpoint, long seeking PA;% # # (2) shown in (2), if the point P is a $ \ widehat {BC } $ the midpoint, PA seeking long.



graph:
{"stem":{"pictures":[{"picturename":"1000024956.jpg","coordinates":{"A":"0.00,0.00","B":"13.00,0.00","C":"1.92,4.62","O":"6.50,0.00"},"collineations":{"0":"B###A###O","1":"C###A"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"C###B###A"}]}],"appliedproblems":{}},"substems":[{"substemid":"1","questionrelies":"","pictures":[{"picturename":"1000024956.jpg","coordinates":{"P":"6.50,6.50"},"collineations":{"0":"A###P"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},{"substemid":"2","questionrelies":"","pictures":[{"picturename":"1000024956.jpg","coordinates":{"P":"9.00,6.00"},"collineations":{"0":"A###P"},"variable-equals":{},"circles":[]}],"appliedproblems":{}}]}

NLP: DiameterRelation{diameter=AB, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, length=null},PointOnArcRelation{point=C, arc=type:MAJOR_ARC⌒AB},PointOnArcRelation{point=P, arc=type:MAJOR_ARC⌒AB},EqualityRelation{AB=13},EqualityRelation{AC=5},EqualityRelation{AP=v_0},MiddlePointOfArcRelation:P/type:MAJOR_ARC⌒AB,Calculation:(ExpressRelation:[key:]v_0),EqualityRelation{AP=v_1},MiddlePointOfArcRelation:P/type:MAJOR_ARC⌒BC,Calculation:(ExpressRelation:[key:]v_1),SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]AP)},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]AP)}

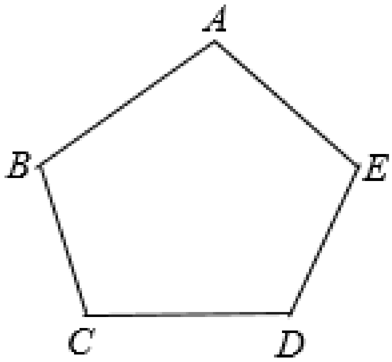
510, topic: Given: As shown in △ABC, D is the midpoint of BC, DE⊥BC, pedal as D, in the AB cross point E, and $ {BE} ^ {2} - {EA} . ^ {2} ={AC} ^ {2} $ Proof: ∠A =90 ° #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000080248_Q_1.jpg","coordinates":{"A":"-10.42,1.53","B":"-14.68,-1.01","C":"-8.96,-0.92","D":"-11.82,-0.97","E":"-11.84,0.69"},"collineations":{"0":"A###E###B","1":"A###C","2":"B###D###C","3":"D###E"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP:
TriangleRelation:△ABC,MiddlePointOfSegmentRelation{middlePoint=D,segment=BC},LinePerpRelation{line1=DE, line2=BC, crossPoint=D},LineCrossRelation [crossPoint=Optional.of(E), iLine1=DE, iLine2=AB],EqualityRelation{(BE)^2-(AE)^2=(AC)^2},ProveConclusionRelation:[Proof: EqualityRelation{∠CAE=(1/2*Pi)}]

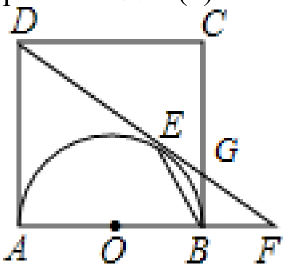
511, topic: In the drawings, explore ∠A + ∠B + ∠C + ∠D + ∠E degree #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000082697_Q_1.jpg","coordinates":{"A":"0.64,1.69","B":"-0.85,0.64","C":"-0.45,-0.82","D":"1.30,-0.95","E":"1.85,0.53"},"collineations":{"0":"A###B","1":"A###E","2":"B###C","3":"D###E","4":"D###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: evaluation (size) :(ExpressRelation: [key:] ∠BAE + ∠ABC + ∠BCD + ∠CDE + ∠AED), SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] ∠BAE + ∠ABC + ∠BCD + ∠CDE + ∠AED)}

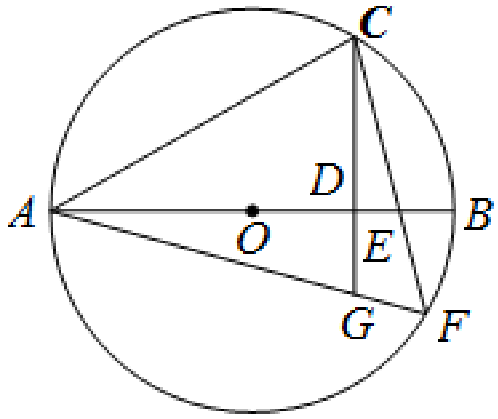
512, topic:. As shown, the square ABCD to the side AB is the diameter, in the interior of the square as semicircle, circle center O, DF semicircular cut at point E, BC at point G, an extension line AB in the cross point F #% # (1) Proof: BG: AD =1:. 4; #% # (2) when BF =4cm, long seeking BE #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000080889_Q_1.jpg","coordinates":{"A":"0.00,0.00","B":"4.00,0.00","C":"4.00,4.00","D":"0.00,4.00","E":"3.20,1.60","F":"5.33,0.00","G":"4.00,1.00","O":"2.00,0.00"},"collineations":{"0":"A###D","1":"D###E###G###F","2":"D###C","3":"C###G###B","4":"A###O###B###F"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: SquareRelation{square=Square:ABCD},CircleCenterRelation{point=O, conic=Circle[⊙O_0]{center=O_0, analytic=(x-x_O_0)^2+(y-y_O_0)^2=r_O_0^2}},LineContactCircleRelation{line=DF, circle=Circle[⊙O_0]{center=O_0, analytic=(x-x_O_0)^2+(y-y_O_0)^2=r_O_0^2}, contactPoint=Optional.of(E), outpoint=Optional.absent()},LineCrossRelation [crossPoint=Optional.of(G), iLine1=DF, iLine2=BC],LineCrossRelation [crossPoint=Optional.of(F), iLine1=DF, iLine2=AB],EqualityRelation{BE=v_1},EqualityRelation{BF=4},Calculation:(ExpressRelation:[key:]v_1), ProveConclusionRelation:[Proof: EqualityRelation{(BG)/(AD)=(1)/(4)}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]BE)}

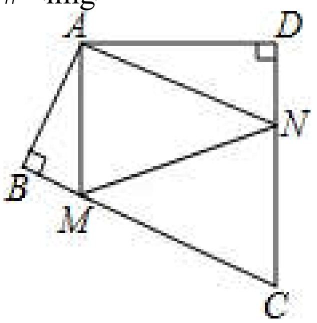
513, topic: FIG, AB is known $ \odot O $ diameter, C is $ \odot O $ any point, the connection AC, a straight line through the point C to D CD⊥AB, and $ AD＞DB $, point E is the DB any point (except D, B), the straight line CE cross $ \ odot O $ at point F, is connected AF line CD at point G #% # (1) Prove:. $ {{AC} ^ {2}} =AG \ cdot AF $; #% # (2) if point E is AD (excluding point A) at any point, the above conclusion holds if established, draw graphics give proof;? if established, please reasons. #% # <img>



graph:
{"stem":{"pictures":[],"appliedproblems":{}},"substems":[{"substemid":"1","questionrelies":"","pictures":[{"picturename":"1000060740_Q_1.jpg","coordinates":{"A":"-4.00,0.00","B":"4.00,0.00","C":"2.00,3.46","D":"2.00,0.00","E":"3.00,0.00","F":"3.54,-1.87","G":"2.00,-1.48","O":"0.00,0.00"},"collineations":{"0":"B###E###D###O###A","1":"C###D###G","2":"E###F###C","3":"A###G###F","4":"A###C"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"A###B###C###F"}]}],"appliedproblems":{}},{"substemid":"2","questionrelies":"","pictures":[{"picturename":"1000060740_Q_1.jpg","coordinates":{"A":"6.00,0.00","B":"14.00,0.00","C":"12.00,3.46","D":"12.00,0.00","E":"11.00,0.00","F":"9.85,-4.00","G":"12.00,-6.24","O":"10.00,0.00","R":"12.00,-3.46"},"collineations":{"0":"B###E###D###O###A","1":"C###D###G###R","2":"E###F###C","3":"A###G###F","4":"A###C"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"A###B###C###F###R"}]}],"appliedproblems":{}}]}

NLP: PointOnLineRelation{point=C, line=CD, isConstant=false, extension=false},PointRelation:D,PointRelation:B,DiameterRelation{diameter=AB, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, length=null},PointOnCircleRelation{circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, points=[C]},SegmentRelation:AC,LinePerpRelation{line1=CD, line2=AB, crossPoint=D},InequalityRelation{AD>BD},PointOnLineRelation{point=E, line=DB, isConstant=false, extension=false},LineCrossCircleRelation{line=CE, circle=⊙O, crossPoints=[F], crossPointNum=1},LineCrossRelation [crossPoint=Optional.of(G), iLine1=AF, iLine2=CD],PointRelation:A,PointOnLineRelation{point=E, line=AD, isConstant=false, extension=false},ProveConclusionRelation:[Proof: EqualityRelation{((AC)^2)=AG*AF}]

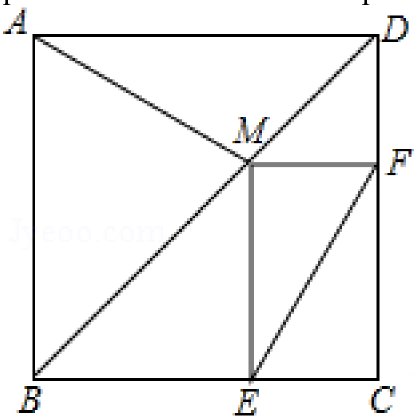
514, topic: As shown, the quadrilateral ABCD, ∠BAD =120 °, ∠B =∠D =90 °, respectively, to find the point M in the BC, CD, N, when the minimum perimeter △AMN, find ∠ AMN + ∠ANM degree. #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000029271_Q_1.jpg","coordinates":{"A":"2.00,3.00","B":"0.00,0.00","C":"5.62,-3.74","D":"6.04,2.74","M":"2.06,-1.38","N":"5.83,-0.42"},"collineations":{"0":"A###B","1":"B###M###C","2":"C###N###D","3":"A###D","4":"A###M","5":"A###N","6":"N###M"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP:
EqualityRelation{C_△AMN=v_0},Know:QuadrilateralRelation{quadrilateral=ABCD},EqualityRelation{∠BAD=(2/3*Pi)},MultiEqualityRelation [multiExpressCompare=∠ABM=∠ADN=(1/2*Pi), originExpressRelationList=[], keyWord=null, result=null],PointOnLineRelation{point=M, line=BC, isConstant=false, extension=false},PointOnLineRelation{point=N, line=CD, isConstant=false, extension=false},ExtremumRelation [key=Express:[v_0], value=null, extremumType=MIN],Calculation:(ExpressRelation:[key:]∠AMN+∠ANM),SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]∠AMN+∠ANM)}

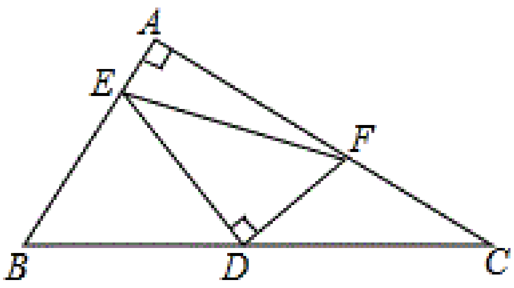
515, topic: As shown in the square ABCD, the point M is a point on the diagonal of the BD, through the point M as ME // CD BC at point E, CD for cross MF // BC at point F. Proof: AM =EF. #% # <img>



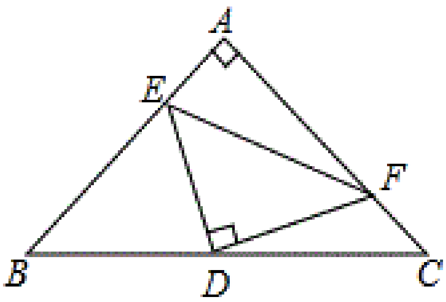
graph:
{"stem":{"pictures":[{"picturename":"1000035175_Q_1.jpg","coordinates":{"A":"-7.83,6.69","B":"-7.83,1.48","C":"-2.59,1.48","D":"-2.62,6.69","E":"-4.33,1.48","F":"-2.61,4.96","M":"-4.35,4.96"},"collineations":{"0":"D###F###C","1":"B###E###C","2":"B###M###D","3":"B###A","4":"A###D","5":"A###M","6":"E###M","7":"F###M","8":"E###F"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: SquareRelation{square=Square:ABCD},PointOnLineRelation{point=M, line=BD, isConstant=false, extension=false},PointOnLineRelation{point=M, line=ME, isConstant=false, extension=false},LineParallelRelation [iLine1=ME, iLine2=CD],LineCrossRelation [crossPoint=Optional.of(E), iLine1=ME, iLine2=BC],LineParallelRelation [iLine1=MF, iLine2=BC],LineCrossRelation [crossPoint=Optional.of(F), iLine1=MF, iLine2=CD],ProveConclusionRelation:[Proof: EqualityRelation{AM=EF}]

516, topic: FIG known right triangle △ABC, ∠BAC =90 °, D is the midpoint of the hypotenuse BC, E, F are AB, AC edge point, and DE⊥DF #%. # (1) shown in (1), the test described $ {{BE} ^ {2}} + {{CF} ^ {2}} ={{EF} ^ {2}} $; #% # (2) FIG. (2) If AB =AC, BE =12, CF =5, find the area of △DEF. #% # <img>



图(1)



图(2)

graph:
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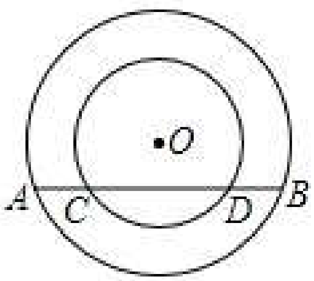
NLP: RightTriangleRelation:RightTriangle:△ABC[Optional.of(A)],EqualityRelation{∠EAF=(1/2*Pi)},MiddlePointOfSegmentRelation{middlePoint=D,segment=BC},PointOnLineRelation{point=E, line=AB, isConstant=false, extension=false},PointOnLineRelation{point=F, line=AC, isConstant=false, extension=false},LinePerpRelation{line1=DE, line2=DF, crossPoint=D},EqualityRelation{S_△DEF=v_0},EqualityRelation{AB=AC},EqualityRelation{BE=12},EqualityRelation{CF=5},Calculation:(ExpressRelation:[key:]v_0),ProveConclusionRelation:[Proof: EqualityRelation{((BE)^2)+((CF)^2)=((EF)^2)}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]S_△DEF)}

517, topic: Known:? As shown, in order to O as the center of two concentric circles, the great circle of the chord AB to pay small round C, D points, #% # (1) test guess the size of AC and BD relationship, and explain the reasons;? #% # (2) if $ AB =24 $, $ CD =10 $, the small circle radius is $ 5 \ sqrt 2 $, seeking great circle radius.



graph:
{"stem":{"pictures":[{"picturename":"1000008161_Q_1.jpg","coordinates":{"A":"-12.00,-5.00","B":"12.00,-5.00","C":"-5.00,-5.00","D":"5.00,-5.00","O":"0.00,0.00"},"collineations":{"0":"B###A###C###D"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"C###D"},{"center":"O","pointincircle":"A###B"}]}],"appliedproblems":{}},"substems":[]}

NLP: ChordOfCircleRelation{chord=AB, circle=Circle[⊙O_0]{center=O_0, analytic=(x-x_O_0)^2+(y-y_O_0)^2=r_O_0^2}, chordLength=null,straightLine=null},PointRelation:D,数

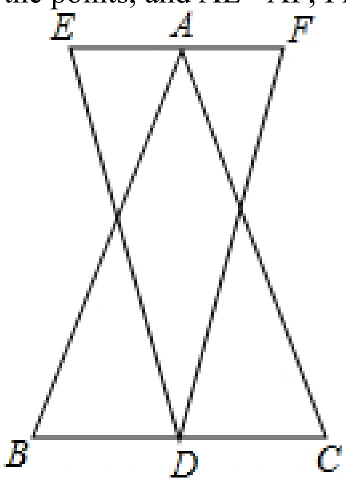
字比较大小：DualExpressRelation{expresses=[Express:[AC], Express:[BD]]},RadiusRelation{radius=M_1N_1, circle=Circle[⊙O_0]{center=O_0, analytic=(x-x_O_0)^2+(y-y_O_0)^2=r_O_0^2}, length=null},EqualityRelation{AB=24},EqualityRelation{CD=10},SolutionConclusionRelation{relation=数字比较大小：DualExpressRelation{expresses=[Express:[AC], Express:[BD]]}}

518, topic: is known, the segment $ AB =10cm $, there is little on the line AB C, and $ BC =4cm $, M is the midpoint of the line segment AC, a rectification AM.

graph:
{"stem":{"pictures":[{"picturename":"1000010199_Q_1.jpg","coordinates":{"A":"0.00,0.00","B":"10.00,0.00","C":"6.00,0.00","M":"3.00,0.00"},"collineations":{"0":"B###A###M###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: EqualityRelation{AM=v_0},EqualityRelation{AB=10},PointOnLineRelation{point=C, line=AB, isConstant=false, extension=false},EqualityRelation{BC=4},MiddlePointOfSegmentRelation{middlePoint=M,segment=AC},Calculation:(ExpressRelation:[key:]v_0),SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]AM)}

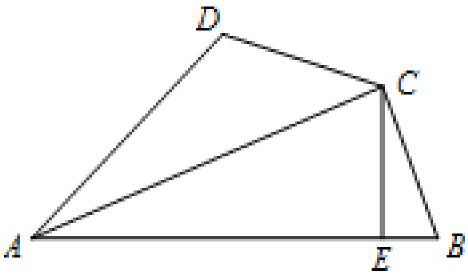
519, topic: As shown in the △ABC, AB =AC, D is the midpoint of BC, EF // BC A straight line through the points, and AE =AF, Proof: . DE =DF #% # <img>



graph:
{"stem":{"pictures":[{"coordinates":{"A":"0,2","B":"-1,0","C":"1,0","D":"0.00,0.00","E":"1,2","F":"-1,2"},"collineations":{"0":"B###D###C","1":"A###B","2":"A###C","3":"F###A###E","4":"F###D","5":"D###E"}}]}}

NLP: PointOnLineRelation{point=A, line=EF, isConstant=false, extension=false},TriangleRelation:△ABC,EqualityRelation{AB=AC},MiddlePointOfSegmentRelation{middlePoint=D,segment=BC},LineParallelRelation [iLine1=EF, iLine2=BC],EqualityRelation{AE=AF},ProveConclusionRelation:[Proof: EqualityRelation{DE=DF}]

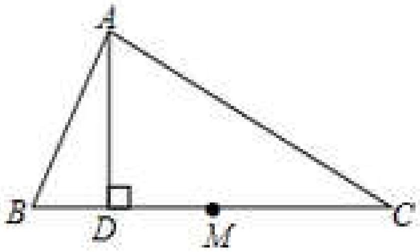
520, topic: As shown in the quadrangle ABCD, the AC bisecting ∠BAD, through the C to make CE⊥AB E, and $ AE =\ frac {1} {2} \ left (AB + AD \ right) $, then ∠ABC + how much ∠ADC equal? #% # <img>



graph:

NLP: known conditions QuadrilateralRelation {quadrilateral =ABCD}, AngleBisectorRelation {line =AC, angle =∠BAD, angle1 =∠BAC, angle2 =∠CAD}, LinePerpRelation {line1 =CE, line2 =AB, crossPoint =E}, EqualityRelation {AE =(1/2) * (AB + AD)}, evaluation (size) :(ExpressRelation: [key:] ∠ABC + ∠ADC), SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key :] ∠ABC + ∠ADC)}

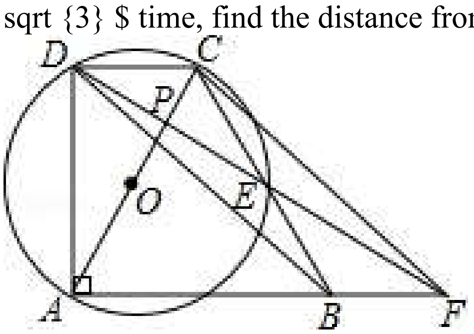
521, topic: As shown in the triangle ABC, $ \ angle B =2 \ angle C $, AD is the height of the triangle, point M is the midpoint of the side BC Proof: $ DM =\ frac {1} {2 } AB $. #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000040694_Q_1.jpg","coordinates":{"A":"-9.03,4.35","B":"-11.00,2.00","C":"-4.00,2.00","D":"-9.03,2.00","M":"-7.50,2.00"},"collineations":{"0":"A###D","1":"A###B","2":"A###C","3":"B###D###M###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleRelation:△ABC,EqualityRelation{∠ABD=2*∠ACM},MiddlePointOfSegmentRelation{middlePoint=M,segment=BC},LinePerpRelation{line1=AD, line2=BD, crossPoint=D},ProveConclusionRelation:[Proof: EqualityRelation{DM=(1/2)*AB}]

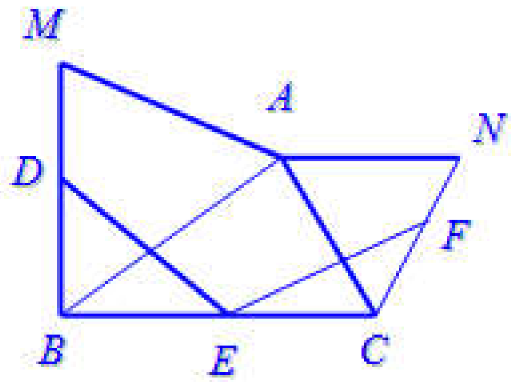
522, topic: As shown, the right trapezoid ABCD, $ AB∥CD $, $ ∠DAB =90 ° $, and $ ∠ABC =60 ° $, $ AB =BC $, $ △ACD $ $ circumcircle ⊙ O $ BC at point E, DE connector and extend, in the cross point P AC, AC extension line AB at point F. ?% # # (1) Proof: $ CF =DB $; #% # (2) When the $ AD =\ sqrt {3} $ time, find the distance from point E to the CF?.



graph:
{"stem":{"pictures":[{"picturename":"1000024955.jpg","coordinates":{"A":"0.00,0.00","B":"4.00,0.00","C":"2.00,3.46","D":"0.00,3.46","E":"3.00,1.73","F":"6.00,0.00","P":"1.50,2.59","O":"1.00,1.73"},"collineations":{"0":"B###A###F","1":"A###O###P###C","2":"B###D","3":"P###D###E###F","4":"F###C","5":"C###D","6":"C###B###E","7":"A###D"},"variable-equals":{},"circles":[{"center":"A","pointincircle":"C###D"}]}],"appliedproblems":{}},"substems":[{"substemid":"1","questionrelies":"2","pictures":[],"appliedproblems":{}},{"substemid":"2","questionrelies":"1","pictures":[],"appliedproblems":{}}]}

NLP: InscribedShapeOfCircleRelation{closedShape=△ACD, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}},RightTrapezoidRelation{rightTrapezoid=RightTrapezoid:ABCD randomOrder:true},LineParallelRelation [iLine1=AB, iLine2=CD],EqualityRelation{∠BAD=(1/2*Pi)},EqualityRelation{∠ABE=(1/3*Pi)},EqualityRelation{AB=BC},LineCrossCircleRelation{line=BC, circle=⊙O, crossPoints=[E], crossPointNum=1},SegmentRelation:DE,LineCrossRelation [crossPoint=Optional.of(P), iLine1=DE, iLine2=AC],LineCrossRelation [crossPoint=Optional.of(F), iLine1=DE, iLine2=AB],距离,求距离：PointToLineDistanceRelation{point=E, line=CF, distance=null},EqualityRelation{AD=(3^(1/2))},ProveConclusionRelation:[Proof: EqualityRelation{CF=BD}],SolutionConclusionRelation{relation=距离,求距离：PointToLineDistanceRelation{point=E, line=CF, distance=null}}

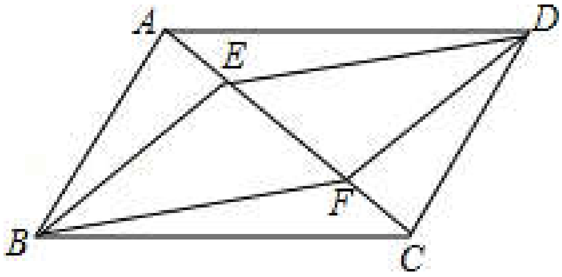
523, topic: Given: FIG, △ABC is an acute triangle respectively AB, AC side to the outside as an equilateral triangle and an equilateral triangle ABM CAN.D, E, F are the MB, BC, CN's. point link DE, EF #% # Proof: DE =EF #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000040184_Q_1.jpg","coordinates":{"A":"-2.73,6.83","B":"-6.75,3.94","C":"-1.03,3.92","D":"-6.99,6.40","E":"-3.89,3.93","F":"-0.19,5.38","M":"-7.23,8.87","N":"0.64,6.84"},"collineations":{"0":"A###B","1":"A###M","2":"A###C","3":"A###N","4":"M###D###B","5":"B###E###C","6":"E###D","7":"E###F","8":"N###F###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: AcuteTriangleRelation:AcuteTriangle:△ABC,MiddlePointOfSegmentRelation{middlePoint=D,segment=MB},MiddlePointOfSegmentRelation{middlePoint=E,segment=BC},MiddlePointOfSegmentRelation{middlePoint=F,segment=CN},SegmentRelation:DE,SegmentRelation:EF,ProveConclusionRelation:[Proof: EqualityRelation{DE=EF}]

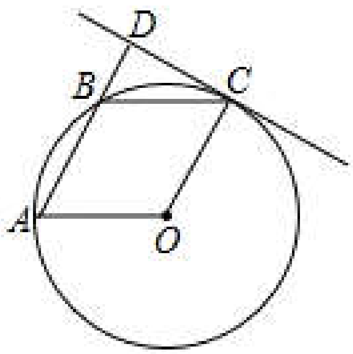
524, topic: Given: As in the parallelogram ABCD, the points E, F on the AC, and AE =CF #% # Proof: BEDF quadrilateral is a parallelogram #% # <img>.



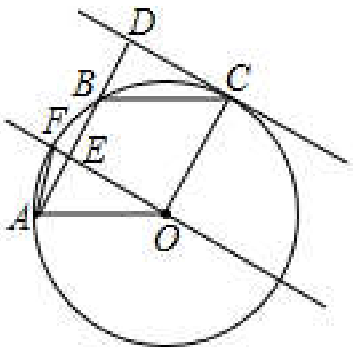
graph:
{"stem":{"pictures":[{"picturename":"1000041501_Q_1.jpg","coordinates":{"A":"-7.00,4.00","B":"-8.00,2.00","C":"-4.00,2.00","D":"-3.00,4.00","E":"-6.22,3.48","F":"-4.78,2.52"},"collineations":{"0":"A###D","1":"D###C","2":"C###B","3":"B###A","4":"B###E","5":"E###D","6":"D###F","7":"F###B","8":"A###E###F###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: ParallelogramRelation{parallelogram=Parallelogram:ABCD},PointOnLineRelation{point=E, line=AC, isConstant=false, extension=false},PointOnLineRelation{point=F, line=AC, isConstant=false, extension=false},EqualityRelation{AE=CF},ProveConclusionRelation:[Proof: ParallelogramRelation{parallelogram=Parallelogram:BEDF}]

525, topic: the known A, B, C are three points on the ⊙O OABC quadrilateral is a parallelogram, through the point C as ⊙ O tangent, AB extension lines cross at point D #% # (1).. FIG ① , find the size of ∠ADC;% # # (2) in FIG ② , CD passes through the point O as parallel lines, and AB at point E, with the $ \widehat {AB} $ at point F., connector AF, seeking ∠FAB size. #% # <img>



①



②

graph:
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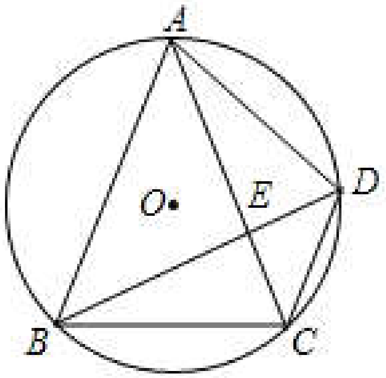
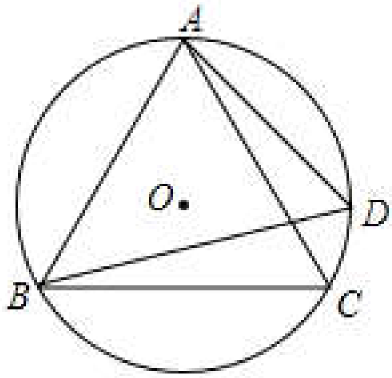
NLP: PointOnCircleRelation{circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, points=[A, B, C]},ParallelogramRelation{parallelogram=Parallelogram:ABCO},LineContactCircleRelation{line=StraightLine[n_0] analytic :y=k_n_0*x+b_n_0 slope:null b:null isLinearFunction:false, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, contactPoint=Optional.of(C), outpoint=Optional.absent()},LineCrossRelation [crossPoint=Optional.of(D), iLine1=StraightLine[n_0] analytic :y=k_n_0*x+b_n_0 slope:null b:null isLinearFunction:false, iLine2=AB],Calculation:AngleRelation{angle=∠BDC},SegmentRelation:AF,Calculation:AngleRelation{angle=∠BAF},PointOnLineRelation{point=O, line=EO, isConstant=false, extension=false},LineCrossRelation [crossPoint=Optional.of(E), iLine1=AB, iLine2=EO],LineParallelRelation [iLine1=CD, iLine2=EO],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]∠BDC)},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]∠BAF)}

526, topic: as shown, attached to the inner △ABC ⊙O, AB =AC, D on the inferior arc AC, ∠ABD =45 ° #% # (1) in FIG ① , BD cross AC at point E, is connected. AD, CD, if AB =BD, Proof: $ CD =\ sqrt {2} DE $; #% # (2) in FIG ② , connected to AD, CD, known $ \ tan \ angle CAD =\ frac {1 {5}} $, seeking sin∠BDC. #% # <img>



①

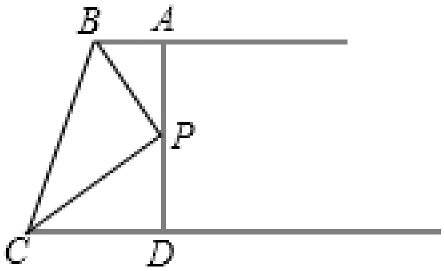


②

graph:
{"stem":{"pictures":[],"appliedproblems":{}},"substems":[{"substemid":"1","questionrelies":"","pictures":[{"picturename":"1000080943_Q_1.jpg","coordinates":{"A":"-10.40,-0.58","B":"-12.05,-5.48","C":"-8.12,-5.21","D":"-7.43,-3.18","E":"-8.78,-3.86","O":"-10.21,-3.37"},"collineations":{"0":"B###A","1":"A###E###C","2":"A###D","3":"B###E###D","4":"B###C","5":"D###C"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"A###B###C###D"}]}],"appliedproblems":{}},{"substemid":"3","questionrelies":"","pictures":[{"picturename":"1000080943_Q_3.jpg","coordinates":{"A":"7.38,-0.50","B":"4.47,-5.12","C":"10.51,-4.98","D":"10.73,-3.71","G":"7.46,-3.78"},"collineations":{"0":"B###A","1":"A###C","2":"A###D","3":"B###D","4":"B###C","5":"D###C"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"A###B###C###D"}]}],"appliedproblems":{}}]}

NLP: InscribedShapeOfCircleRelation{closedShape=△ABC, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}},EqualityRelation{AB=AC},PointOnArcRelation{point=D, arc=type:MINOR_ARC⌒AC},EqualityRelation{∠ABE=(1/4*Pi)},LineCrossRelation [crossPoint=Optional.of(E), iLine1=BD, iLine2=AC],SegmentRelation:AD,SegmentRelation:CD,EqualityRelation{AB=BD},SegmentRelation:AD,SegmentRelation:CD,EqualityRelation{tan(∠DAE)=(1/5)},Calculation:(ExpressRelation:[key:]sin(∠CDE)),ProveConclusionRelation:[Proof: EqualityRelation{CD=(2^(1/2))*DE}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]sin(∠CDE))}

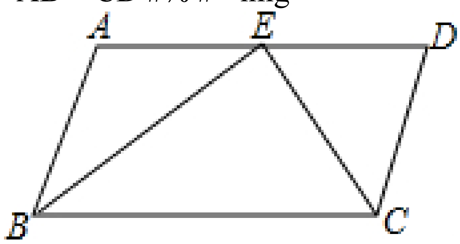
527, topic: FIG known AB∥CD, BP and CP, respectively, and bisecting ∠ABC ∠DCB, AD AB through the point P and perpendicular to Proof: . P is the midpoint of AD #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"20586E62156944A28A2C929700DDB35B.jpg","coordinates":{"A":"-10.92,5.00","B":"-12.00,5.00","C":"-13.00,2.00","D":"-10.92,2.00","P":"-10.92,3.50"},"collineations":{"0":"A###P###D","1":"B###A","2":"B###C","3":"B###P","4":"C###D","5":"P###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: LineParallelRelation [iLine1=AB, iLine2=CD],AngleBisectorRelation{line=BP,angle=∠ABC, angle1=∠ABP, angle2=∠CBP},AngleBisectorRelation{line=CP,angle=∠BCD, angle1=∠BCP, angle2=∠DCP},ProveConclusionRelation:[Proof: MiddlePointOfSegmentRelation{middlePoint=P,segment=AD}]

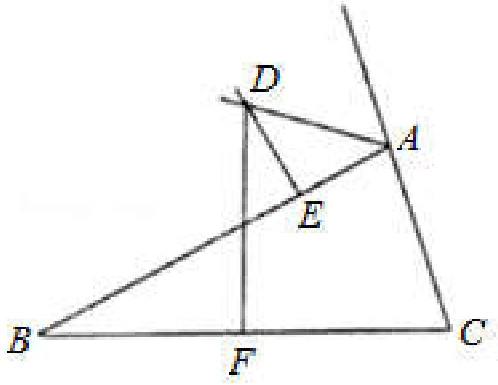
528, topic: FIG, AB∥CD, BE, CE and are ∠ABC ∠BCD bisector point E on the AD, Proof: . BC =AB + CD #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"20A7BB2E2B444A19AD663B9D6E2A8E49.jpg","coordinates":{"A":"-12.51,5.98","B":"-14.00,3.00","C":"-8.00,3.00","D":"-6.81,5.39","E":"-9.66,5.68"},"collineations":{"0":"A###E###D","1":"B###A","2":"C###E","3":"B###C","4":"B###E","5":"C###D"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: LineParallelRelation [iLine1=AB, iLine2=CD],AngleBisectorRelation{line=BE,angle=∠ABC, angle1=∠ABE, angle2=∠CBE},AngleBisectorRelation{line=CE,angle=∠BCD, angle1=∠BCE, angle2=∠DCE},PointOnLineRelation{point=E, line=AD, isConstant=false, extension=false},ProveConclusionRelation:[Proof: EqualityRelation{BC=AB+CD}]

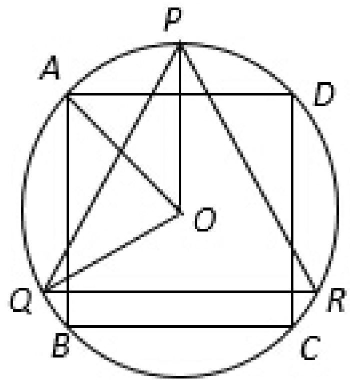
529, topic: As shown, the side BC $ \triangle ABC $ in the vertical cross $ \triangle BAC $ DF exterior angle bisector AD to D, F is a pedal, $ DE\perp AB $ to E, and $ AB>AC $ Proof: $ BE-AC =AE $.



graph:
{"stem":{"pictures":[{"picturename":"1000026434_Q_1.jpg","coordinates":{"A":"8.00,3.00","B":"0.00,0.00","C":"9.00,0.00","D":"4.50,4.67","E":"5.48,2.06","F":"4.50,0.00"},"collineations":{"0":"B###F###C","1":"A###E###B","2":"A###C","3":"D###F","4":"D###E","5":"A###D"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleRelation:△BAC,TriangleRelation:△ABC,MiddlePerpendicularRelation [iLine1=DF, iLine2=BC, crossPoint=Optional.of(F)],LineCrossRelation [crossPoint=Optional.of(D), iLine1=DF, iLine2=AD],LinePerpRelation{line1=DE, line2=AB, crossPoint=E},InequalityRelation{AB>AC},AngleBisectorRelation{line=AD,angle=∠CAE, angle1=∠DAE, angle2=∠CAD},ProveConclusionRelation:[Proof: EqualityRelation{BE-AC=AE}]

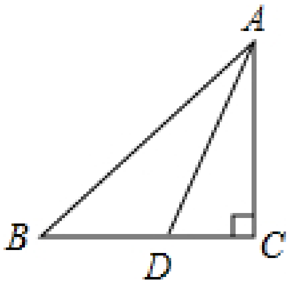
530, topic: FIG, $ △PQR $ a $ ⊙O $ contact within the equilateral triangle, quadrangle ABCD is connected to the square of $ ⊙O $, $ BC // QR $, $ ∠AOQ $ required degree.



graph:
{"stem":{"pictures":[{"picturename":"1000025043.jpg","coordinates":{"A":"0.92,6.97","B":"0.92,-1.20","C":"9.08,-1.20","D":"9.08,6.97","P":"5.00,8.66","Q":"0.00,0.00","R":"10.00,0.00","O":"5.00,2.89"},"collineations":{"0":"B###A","1":"B###C","2":"C###D","3":"D###A","4":"P###Q","5":"Q###R","6":"P###R","7":"O###Q","8":"O###P","9":"O###A"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"A###B###C###D###P###Q###R"}]}],"appliedproblems":{}},"substems":[]}

NLP: InscribedShapeOfCircleRelation {closedShape =ABCD, circle =Circle [⊙O] {center =O, analytic =(x-x_O) ^ 2 + (y-y_O) ^ 2 =r_O ^ 2}}, LineParallelRelation [iLine1 =BC, iLine2 =QR], find the size of the angle: AngleRelation {angle =∠AOQ}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] ∠AOQ)}

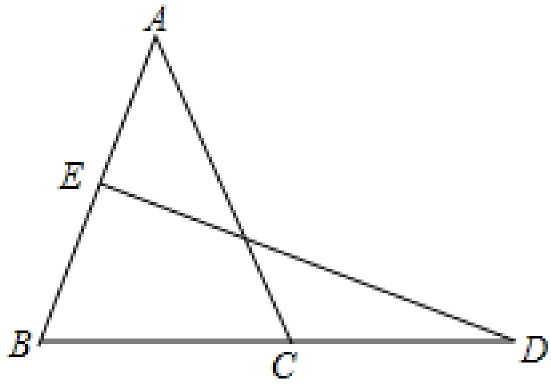
531, topic: As shown in △ABC is known ∠C =90 °, AC =BC, AD is the bisector of △ABC Proof: AB =AC + CD #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000035765_Q_1.jpg","coordinates":{"A":"-2.00,4.00","B":"-5.00,1.00","C":"-2.00,1.00","D":"-3.24,1.00"},"collineations":{"0":"A###B","1":"D###A","2":"C###A","3":"C###D###B"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleRelation:△ABC,EqualityRelation{∠ACD=(1/2*Pi)},EqualityRelation{AC=BC},TriangleRelation:△ABC,AngleBisectorRelation{line=AD,angle=∠BAC, angle1=∠CAD, angle2=∠BAD},ProveConclusionRelation:[Proof: EqualityRelation{AB=AC+CD}]

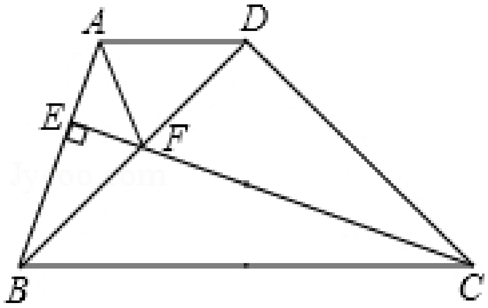
532, topic: Given: As shown in the △ABC, AB =AC =6, BC =4, AB AB perpendicular bisector cross at point E, cross-point of an extension line BC in D #% # (1.) of the sine find ∠D;% # # (2) find the point C from the straight line DE to #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000052309_Q_1.jpg","coordinates":{"A":"-6.00,7.66","B":"-8.00,2.00","C":"-4.00,2.00","D":"1.00,2.00","E":"-7.00,4.83"},"collineations":{"0":"A###E###B","1":"E###D","2":"B###C###D","3":"A###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: MiddlePerpendicularRelation [iLine1=DE, iLine2=AB, crossPoint=Optional.of(E)],TriangleRelation:△ABC,MultiEqualityRelation [multiExpressCompare=AB=AC=6, originExpressRelationList=[], keyWord=null, result=null],EqualityRelation{BC=4},LineCrossRelation [crossPoint=Optional.of(E), iLine1=AB, iLine2=DE],LineCrossRelation [crossPoint=Optional.of(D), iLine1=BC, iLine2=DE],距离,求距离：PointToLineDistanceRelation{point=C, line=DE, distance=null},SolutionConclusionRelation{relation=距离,求距离：PointToLineDistanceRelation{point=C, line=DE, distance=null}}

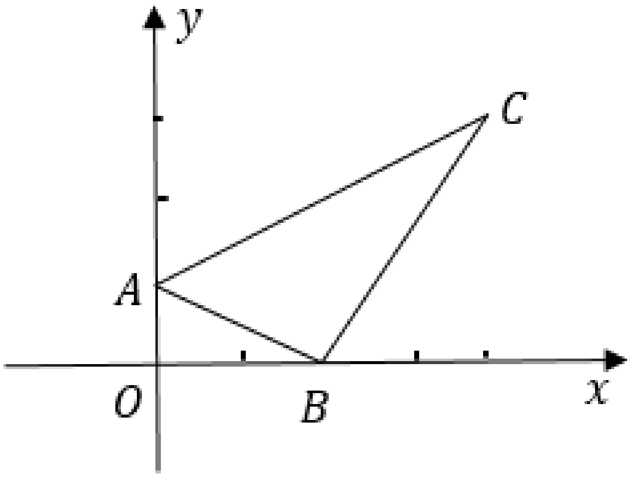
533, topic: as shown in the trapezoid ABCD, AD∥BC, CE⊥AB in E, trapezoidal cross diagonal BD in F., If △BDC is connected AF isosceles right triangle, and ∠BDC =90 °. . #% # confirmation: CF =AB + AF #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000030949_Q_1.jpg","coordinates":{"A":"-8.57,5.00","B":"-9.00,3.00","C":"-5.00,3.00","D":"-7.00,5.00","E":"-8.81,3.89","F":"-8.25,3.75"},"collineations":{"0":"D###A","1":"A###E###B","2":"C###F###E","3":"A###F","4":"C###D","5":"B###F###D","6":"C###B"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: TrapezoidRelation{trapezoid=Trapezoid:ABCD, isRandomOrder:true},LineParallelRelation [iLine1=AD, iLine2=BC],LinePerpRelation{line1=CE, line2=AB, crossPoint=E},TrapezoidRelation{trapezoid=Trapezoid:ABCD, isRandomOrder:true},LineCrossRelation [crossPoint=Optional.of(F), iLine1=CE, iLine2=BD],SegmentRelation:AF,IsoscelesRightTriangleRelation:IsoscelesRightTriangle:IsoscelesTriangle:△BDC[Optional.of(D)][Optional.of(D)],EqualityRelation{∠CDF=(1/2*Pi)},ProveConclusionRelation:[Proof: EqualityRelation{CF=AB+AF}]

534, topic:.? As shown, the plane rectangular coordinate system, $ A (0,1) $, $ B (2,0) $, $ C (4,3) $ #% # (1) find $ △ABC $ area;? #% # (2) is provided a point P on the coordinate axis, and is equal to $ △APB $ and $ △ABC $ area, find the coordinates of the point P.

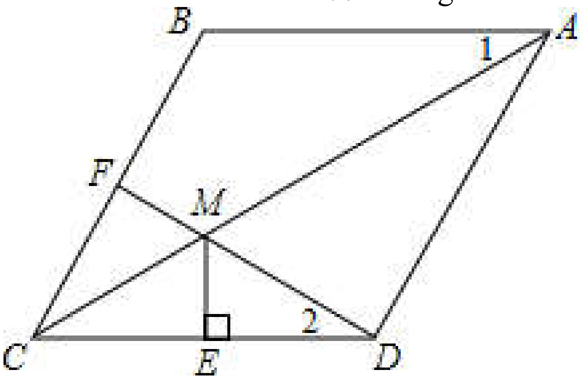


graph:
{"stem":{"pictures":[{"picturename":"1000020150_Q_1.jpg","coordinates":{"A":"0.00,1.00","B":"2.00,0.00","C":"4.00,3.00","O":"0.00,0.00"},"collineations":{"0":"A###C","1":"A###B","2":"B###C","3":"O###A","4":"O###B"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP:
PointRelation:A(0,1),PointRelation:B(2,0),PointRelation:C(4,3),EqualityRelation{S_△ABC=v_0},Calculation:(ExpressRelation:[key:]v_0),EqualityRelation{S_△ABP=v_1},EqualityRelation{S_△ABC=v_2},{OrRelation:PointOnLineRelation{point=P, line=StraightLine[X] analytic :y=0 slope:0 b:0 isLinearFunction:false, isConstant=false, extension=false} OR PointOnLineRelation{point=P, line=StraightLine[Y] analytic :x=0 slope: b: isLinearFunction:false, isConstant=false, extension=false}},EqualityRelation{v_1=v_2},Coordinate:PointRelation:P,SolutionConclusionRelation{rel

ation=Calculation:(ExpressRelation:[key:]S_△ABC)},SolutionConclusionRelation{relation=Coordinate:PointRelation:P}

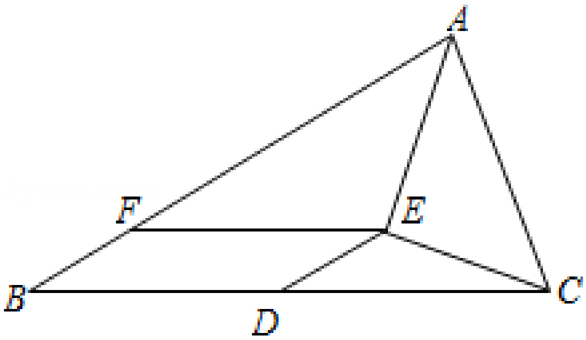
535, topic: FIG, at diamond ABCD, F is the midpoint of the side BC, DF diagonal AC at point M, M through the point to point as ME⊥CD E, ∠1 =∠2 #%. # (1) if CE =1, the required length BC;% # # (2) Prove:. AM =DF + ME #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000040925_Q_1.jpg","coordinates":{"A":"5.20,3.00","B":"1.73,3.00","C":"0.00,0.00","D":"3.47,0.00","E":"1.73,0.00","F":"0.87,1.50","M":"1.73,1.00"},"collineations":{"0":"A###B","1":"B###F###C","2":"C###E###D","3":"D###A","4":"A###M###C","5":"D###M###F","6":"M###E"},"variable-equals":{"0":"∠1=∠BAC","1":"∠2=∠CDF"},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP:
RhombusRelation{rhombus=Rhombus:ABCD},MiddlePointOfSegmentRelation{middlePoint=F,segment=BC},LineCrossRelation [crossPoint=Optional.of(M), iLine1=DF, iLine2=AC],LinePerpRelation{line1=ME, line2=CD, crossPoint=E},EqualityRelation{∠BAM=∠EDM},EqualityRelation{BC=v_0},EqualityRelation{CE=1},Calculation:(ExpressRelation:[key:]v_0),SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]BC)},ProveConclusionRelation:[Proof:EqualityRelation{AM=DF+EM}]

536, topic: As shown in △ABC, the point D is the midpoint of the side BC, point E in △ABC, the AE equally ∠BAC, CE⊥AE, point F on the side AB, EF∥BC #%. # (1) Proof: BDEF quadrilateral is a parallelogram; #% # (2) line segment BF, how has the relationship between the number of AB, AC prove the conclusion you get #% # <img>?.



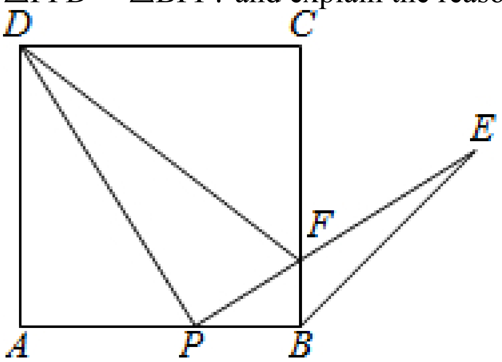
graph:
{"stem":{"pictures":[{"picturename":"1000031929_Q_1.jpg","coordinates":{"A":"0.50,7.20","B":"-8.68,3.12","C":"1.53,3.10","D":"-1.49,3.10","E":"-0.91,4.29","F":"-6.01,4.31"},"collineations":{"0":"B###F###A","1":"A###C","2":"E###F","3":"B###D###C","4":"D###E###A","5":"C###E"},"variable-equals":{},"circles

":[]}],"appliedproblems":{}},"substems":[]}

NLP:

TriangleRelation:△ABC,MiddlePointOfSegmentRelation{middlePoint=D,segment=BC},TriangleRelation:△ABC,PositionOfPoint2RegionRelation{point=E, region=EnclosedRegionRelation{name=ABC, closedShape=△ABC}, position=inner},AngleBisectorRelation{line=AE,angle=∠CAF, angle1=∠CAE, angle2=∠EAF},LinePerpRelation{line1=CE, line2=AE, crossPoint=E},PointOnLineRelation{point=F, line=AB, isConstant=false, extension=false},LineParallelRelation [iLine1=EF, iLine2=BC],Calculation:(ExpressRelation:[key:](BF/AB)),Calculation:(ExpressRelation:[key:](AB/AC)),ProveConclusionRelation:[Proof: ParallelogramRelation{parallelogram=Parallelogram:BDEF}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:](BF/AB))},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:](AB/AC))}

537, topic: FIG, point P is a point (not the point A, B overlap) on the side of the square ABCD AB, the line segment PD and PD is connected is rotated 90 ° to obtain a line segment P in the clockwise direction about a point PE, PE side BC in cross point F, connected BE, DF #% # (1) Proof: ∠ADP =∠EPB; #% # (2) find the degree of ∠CBE; #% # (3) when $ \ frac {AP} {AB} is equal to the value of $ number, △PFD∽ △BFP? and explain the reasons. #% # <img>



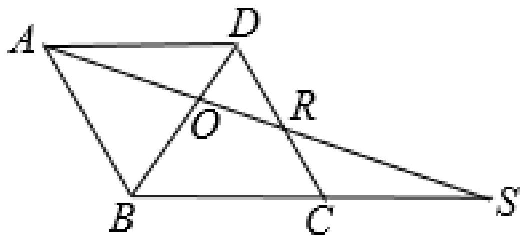
graph:

{"stem":{"pictures":[{"picturename":"1000062197_Q_1.jpg","coordinates":{"A":"-11.03,-4.02","B":"-6.01,-4.02","C":"-6.01,1.01","D":"-11.03,1.01","E":"-2.70,-0.71","F":"-6.01,-2.89","P":"-7.73,-4.02"},"collineations":{"0":"D###A","1":"B###E","2":"C###D","3":"D###F","4":"A###P###B","5":"B###F###C","6":"D###P","7":"P###E"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP:

PointRelation:A,PointRelation:B,SquareRelation{square=Square:ABCD},PointOnLineRelation{point=P, line=AB, isConstant=false, extension=false},SegmentRelation:PD,RotateRelation{preData=PD, afterData=PE, rotatePoint=P, rotateDegree='(1/2*Pi)', rotateDirection=CLOCKWISE},LineCrossRelation [crossPoint=Optional.of(F), iLine1=PE, iLine2=BC],SegmentRelation:BE,SegmentRelation:DF,Calculation:AngleRelation{angle=∠EBF},TriangleSimilarRelation{triangleA=△PFD, triangleB=△BFP},Calculation:(ExpressRelation:[key:]((AP)/(AB))),ProveConclusionRelation:[Proof: EqualityRelation{∠ADP=∠BPE}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]∠EBF)},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]((AP)/(AB)))}

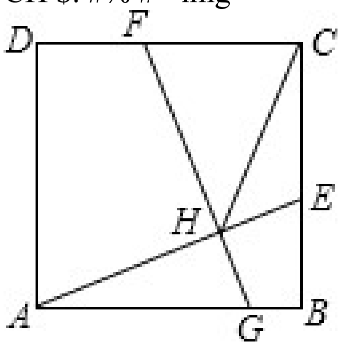
538, topic: FIG known: ABCD in the diamond, O is a diagonal line connecting a point and extend AO, with DC at point R, and the extended line BC at point S. If AD =4 on the BD. , ∠DCB =60 °, BS =10 #% # (1) of the required length AS;. #% # (2) Determine the length of OR #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000040744_Q_1.jpg","coordinates":{"A":"-1.00,1.73","B":"0.00,0.00","C":"2.00,0.00","D":"1.00,1.73","O":"0.71,1.24","R":"1.40,1.04","S":"5.00,0.00"},"collineations":{"0":"A###B","1":"B###C###S","2":"C###R###D","3":"D###A","4":"A###O###R###S","5":"B###O###D"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: RhombusRelation{rhombus=Rhombus:ABCD},PointOnLineRelation{point=O, line=BD, isConstant=false, extension=false},SegmentRelation:AO,LineCrossRelation [crossPoint=Optional.of(R), iLine1=AO, iLine2=DC],LineCrossRelation [crossPoint=Optional.of(S), iLine1=AO, iLine2=BC],EqualityRelation{AD=4},EqualityRelation{∠BCR=(1/3*Pi)},EqualityRelation{BS=10},EqualityRelation{AS=v_0},Calculation:(ExpressRelation:[key:]v_0),EqualityRelation{OR=v_1},Calculation:(ExpressRelation:[key:]v_1),SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]AS)},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]OR)}

539, topic: as shown, square in $ $ ABCD, E, F are the BC side, a point on the DC, and $ BE =FD $, connected AE, through the point F as $ FH⊥AE $, cross at point AB .. G, connected CH #% # (1) if $ DF =2 $, $ \ tan \ angle EAB =\ frac {1} {3} $, seeking $ the AE $ value #% # (2) Proof: $ EH + FH =\ sqrt 2 CH $. #% # <img>

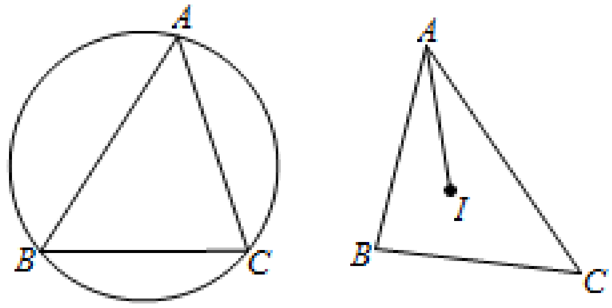


graph:
{"stem":{"pictures":[{"picturename":"1000007583_Q_1.jpg","coordinates":{"A":"0.00,0.00","B":"6.00,0.00","C":"6.00,6.00","D":"0.00,6.00","E":"6.00,2.00","F":"2.00,6.00","G":"4.00,0.00","H":"3.60,1.20"},"collineations":{"0":"A###H###E","1":"F###C###D","2":"E###C###B","3":"F###H###G","4":"C###H","5":"A###D","6":"A###G###B"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: SquareRelation{square=Square:ABCD},PointOnLineRelation{point=E, line=BC, isConstant=false, extension=false},PointOnLineRelation{point=F, line=DC, isConstant=false, extension=false},EqualityRelation{BE=DF},SegmentRelation:AE,LinePerpRelation{line1=FH, line2=AE, crossPoint=H},LineCrossRelation [crossPoint=Optional.of(G), iLine1=FH, iLine2=AB],SegmentRelation:CH,EqualityRelation{DF=2},EqualityRelation{tan(∠GAH)=(1/3)},Calculation:(ExpressRelation:[key:]AE),SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]AE)},ProveConclusionRelation:[Proof: EqualityRelation{EH+FH=(2^(1/2))*CH}]

540, topic: Given: As shown, in an acute triangle ABC, BC =5, $ \ sin \ angle BAC =\ frac {4} {5} $ #%

(1) shown in (1), seeking. △ABC circumscribed circle diameter; long #% # (2) shown in (2), the point is inside $ I $ △ABC, if BA =BC, the AI $ $ seeking a #% # <img>

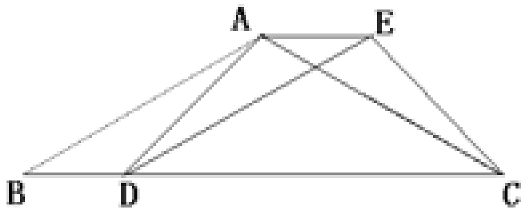


(1) (2)

graph:
{"stem":{"pictures":[],"appliedproblems":{}},"substems":[{"substemid":"1","questionrelies":"","pictures":[{"picturename":"10000060770_Q_1.jpg","coordinates":{"A":"0.52,1.93","B":"-1.48,-1.34","C":"1.48,-1.34","O":"0.00,0.00"},"collineations":{"0":"A###B","1":"A###C","2":"B###C"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"A###C###B"}]}],"appliedproblems":{}},{"substemid":"2","questionrelies":"","pictures":[{"picturename":"10000060770_Q_1.jpg","coordinates":{"A":"-10.00,3.12","B":"-11.35,0.00","C":"-8.07,-0.40","I":"-9.93,0.87"},"collineations":{"0":"A###B","1":"A###C","2":"A###I","3":"B###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}}]}

NLP: AcuteTriangleRelation:AcuteTriangle:△ABC,EqualityRelation{BC=5},EqualityRelation{sin(∠BAC)=(4/5)},InscribedShapeOfCircleRelation{closedShape=△ABC, circle=Circle[⊙O_0]{center=O_0, analytic=(x-x_O_0)^2+(y-y_O_0)^2=r_O_0^2}},圆的直径：CircleRelation{circle=Circle[⊙O_0]{center=O_0, analytic=(x-x_O_0)^2+(y-y_O_0)^2=r_O_0^2}},EqualityRelation{AI=v_1},CoreAndShapeRelation:I/△ABC/InnerCentre,EqualityRelation{AB=BC},Calculation:(ExpressRelation:[key:]v_1),SolutionConclusionRelation{relation=圆的直径：CircleRelation{circle=Circle[⊙O_0]{center=O_0, analytic=(x-x_O_0)^2+(y-y_O_0)^2=r_O_0^2}}},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]AI)}

541, topic: FIG known parallelogram is a quadrilateral ABDE, C is the extension line of the side BD that link AC, CE, so that AB =AC #% # ＜img＞#% # (1) Proof: $ △BAD≌ △AEC $; #% # (2) if ∠B =30 °, ∠ADC =45 °, BD =10, find the area of a parallelogram ABDE.



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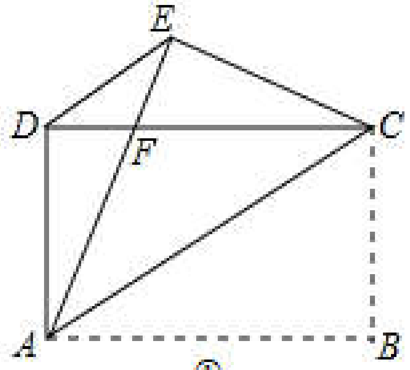
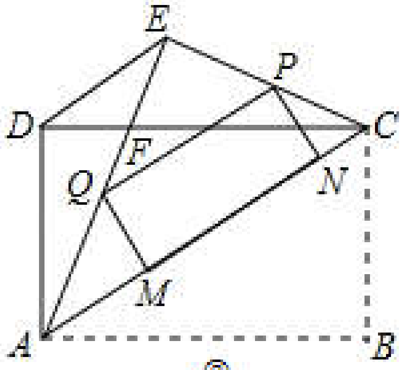
graph:
{"stem":{"pictures":[{"picturename":"1000040204_Q_1.jpg","coordinates":{"A":"2.37,1.37","B":"0.00,0.00","C":"4.74,0.00","D":"1.00,0.00","E":"3.37,1.37"},"collineations":{"0":"A###B","1":"A###D","2":"A###E","3":"A###C","4":"D###E","5":"D###C###B","6":"C###E"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: ParallelogramRelation{parallelogram=Parallelogram:ABDE},PointOnLineRelation{point=C, line=BD, isConstant=false, extension=true},SegmentRelation:AC,SegmentRelation:CE,EqualityRelation{AB=AC},ParallelogramRelation{parallelogram=Parallelogram:ABDE},EqualityRelation{S_ABDE=v_0},EqualityRelation{∠ABD=(1/6*Pi)},EqualityRelation{∠ADC=(1/4*Pi)},EqualityRelation{BD=10},Calculation:(ExpressRelation:[key:]v_0),ProveConclusionRelation:[Proof: TriangleCongRelation{triangleA=△BAD, triangleB=△AEC}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]S_ABDE)}

542, topic: FIG ①, the rectangle ABCD, AB =4, AD =3, rectangle folded along the straight line AC, so that the point B falls point E, AE cross CD at point F, is connected DE #% # (. 1) Proof: △DEC≌△EDA; #% # (2) find the value of DF; #% # (3) in FIG ②, if P is a fixed point on a line segment EC, through the point P within the inscribed rectangle as △AEC, so that the vertices fall on a line segment Q AE, vertices M, N falling on line segment AC, when why PE segment length value, the maximum area rectangle PQMN? and finding its maximum. #% # <img>

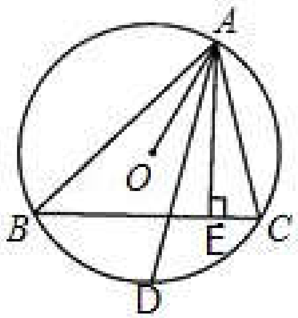




graph:
{"stem":{"pictures":[{"picturename":"1000050484_Q_1.jpg","coordinates":{"A":"-9.00,6.00","B":"-5.00,6.00","C":"-5.00,9.00","D":"-9.00,9.00","E":"-7.88,9.84","F":"-8.13,9.00"},"collineations":{"0":"B###A","1":"C###F###D","2":"D###A","3":"B###C","4":"A###C","5":"D###E","6":"E###C","7":"A###F###E"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[{"substemid":"3","questionrelies":"","pictures":[{"picturename":"1000050484_Q_1.jpg","coordinates":{"P":"-6.51,9.42","Q":"-8.42,8.00","M":"-7.68,7.00","N":"-5.77,8.42"},"collineations":{"0":"C###N###M###A","1":"E###F###Q###A","2":"E###P###C","3":"Q###M","4":"P###Q","5":"P###N"},"variable-equals":{},"circles":[]}],"appliedproblems":{}}]}

NLP: RectangleRelation{rectangle=Rectangle:ABCD},EqualityRelation{AB=4},EqualityRelation{AD=3},RectangleRelation{rectangle=Rectangle:ABCD},TurnoverRelation{start=B, segment=AC,target=E},LineCrossRelation [crossPoint=Optional.of(F), iLine1=AE, iLine2=CD],SegmentRelation:DE,Calculation:(ExpressRelation:[key:]DF),EqualityRelation{EP=v_0},RectangleRelation{rectangle=Rectangle:PQMN},EqualityRelation{S_MNPQ=v_1},PointOnLineRelation{point=P, line=EC, isConstant=false, extension=false},ParabolaVertexRelation{point=M, conic=Parabola[]:[y^2=2*x_*x[x_>0]], positionType=},PointOnLineRelation{point=N, line=AC, isConstant=false, extension=false},ExtremumRelation [key=Express:[v_1], value=null, extremumType=MAX],Calculation:(ExpressRelation:[key:]v_0),ProveConclusionRelation:[Proof: TriangleCongRelation{triangleA=△DEC, triangleB=△EDA}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]DF)},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]EP)}

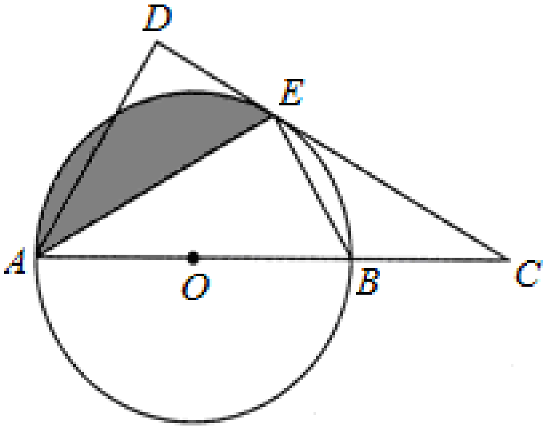
543, topic: Given: As shown, the contact with the $ \triangle ABC $ $ \odot O $, D is $ \widehat {BC} $ midpoint, $ AE\perp BC $ in E. Proof: AD bisecting $ \angle OAE $.



graph:
{"stem":{"pictures":[{"picturename":"1000025138.jpg","coordinates":{"A":"1.00,6.00","B":"-5.00,0.00","C":"3.00,0.00","D":"-1.00,-2.47","E":"1.00,0.00","O":"-1.00,2.00"},"collineations":{"0":"E###B###C","1":"A###B","2":"C###A","3":"A###D","4":"A###E","5":"O###A"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"B###A###C###D"}]}],"appliedproblems":{}},"substems":[]}

NLP: InscribedShapeOfCircleRelation{closedShape=△ABC, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}},MiddlePointOfArcRelation:D/type:MAJOR_ARC⌒BC,LinePerpRelation{line1=AE, line2=BC, crossPoint=E},ProveConclusionRelation:[Proof: AngleBisectorRelation{line=AD,angle=∠EAO, angle1=∠DAE, angle2=∠DAO}]

544, topic: FIG, AB is $ \ odot O $ diameter, C is the extension line of the bit AB, CD and $ \ odot O $ tangent to point E, AD⊥CD at point D #% # (1.) Proof: AE bisecting ∠DAC; #% # (2) If AB =3, ∠ABE =60 °:. #% # ① long seek AD; #% # ② and the area of the shaded portion in FIG. #% # <img>

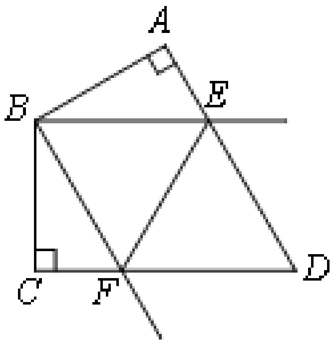


graph:
{"stem":{"pictures":[{"picturename":"1000060829_Q_1.jpg","coordinates":{"A":"-3.00,0.00","B":"3.00,0.00","C":"6.00,0.00","D":"-0.75,3.90","O":"0.00,0.00","E":"1.50,2.60","F":"-1.50,2.60"},"collineations":{"0":"B###C###A###O","1":"C###D###E","2":"A###F###D","3":"E###A","4":"E###A","5":"E###O"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"A###B###E###F"}]}],"appliedproblems":{}},"substems":[]}

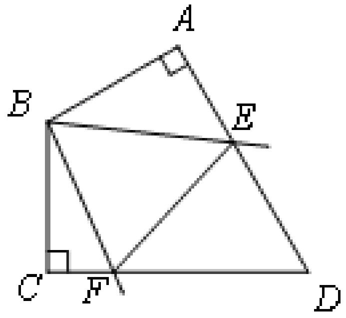
NLP: DiameterRelation{diameter=AB, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, length=null},PointOnLineRelation{point=C, line=AB, isConstant=false, extension=true},LineContactCircleRelation{line=CD, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, contactPoint=Optional.of(E), outpoint=Optional.absent()},LinePerpRelation{line1=AD, line2=CD, crossPoint=D},EqualityRelation{AB=3},EqualityRelation{∠ABE=(1/3*Pi)},EqualityRelation{AD=v_0},Calculation:(ExpressRelation:[key:]v_0),ProveConclusionRelation:[Proof: AngleBisectorRelation{line=AE,angle=∠FAO, angle1=∠EAF, angle2=∠

EAO}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]AD)}

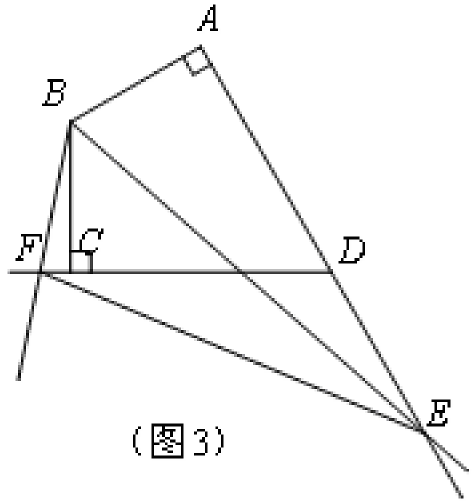
545, topic: known in the quadrangle ABCD, BA⊥AD in A, BC⊥CD in C, BA =BC, ∠ABC =120 °, ∠EBF =60 ° ∠EBF now rotated about point B, both sides of it. respectively straight cross AD, CD in E, F #% # (1) about the point B when ∠EBF rotation when the AE =CF (FIG. 1) Prove:. ∠ABE =∠CBF =30 °; #% # (2) when the AE ≠ CF ∠EBF rotation about the point B, #% # ① in the case of Figure 2, please explore AE, how to satisfy the relationship between the number of CF, EF, and the reasons; #% # ② in in the case of Figure 3, please continue to explore AE, among CF, EF and how to meet the quantitative relationship, and explain the reasons. #% # <img>



(图1)



(图2)

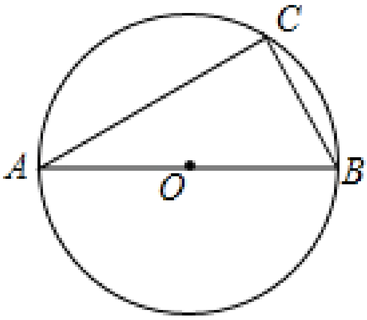


(图3)

graph:
{"stem":{"pictures":[],"appliedproblems":{}},"substems":[{"substemid":"1","questionrelies":"","pictures":[{"picturename":"1000050258_Q_1.jpg","coordinates":{"A":"-4.09,5.04","B":"-7.09,3.31","C":"-7.09,-0.16","D":"-1.09,-0.16","E":"-3.09,3.31","F":"-5.09,-0.16"},"collineations":{"0":"A###D###E","1":"A###B","2":"E###B","3":"B###F","4":"B###C","5":"C###F###D","6":"E###F"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},{"substemid":"2","questionrelies":"","pictures":[{"picturename":"1000050258_Q_2.jpg","coordinates":{"A":"-4.09,5.04","B":"-7.09,3.31","C":"-7.09,-0.16","D":"-1.09,-0.16","E":"-2.70,2.63","F":"-5.74,-0.16"},"collineations":{"0":"A###D###E","1":"A###B","2":"E###B","3":"B###F","4":"B###C","5":"C###F###D","6":"E###F"},"variable-equals":{},"circles":[]}],"appliedproblems":{}}]}

NLP: known conditions QuadrilateralRelation {quadrilateral =ABCD}, LinePerpRelation {line1 =BA, line2 =AD, crossPoint =A}, LinePerpRelation {line1 =BC, line2 =CD, crossPoint =C}, EqualityRelation {AB =BC}, EqualityRelation {∠ABC =(2/3 * Pi)}, EqualityRelation {∠EBF =(1/3 * Pi)}, PointOnLineRelation {point =E, line =CD, isConstant =false, extension =false}, PointRelation: F, (ExpressRelation: [key:] 2), evaluation (size) :(ExpressRelation: [key:] (AE / CF)), evaluation (size) :(ExpressRelation: [key:] (CF / EF)), (ExpressRelation: [key:] 3), evaluation (size) :(ExpressRelation: [key:] (AE / CF)), evaluation (size) :(ExpressRelation: [key:] (CF / EF)), ProveConclusionRelation: [Proof: MultiEqualityRelation [multiExpressCompare =∠ABE =∠CBF =(1/6 * Pi), originExpressRelationList =[], keyWord =null, result =null]], SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation : [key:] (AE / CF))}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] (CF / EF))}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation : [key:] (AE / CF))}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] (CF / EF))}

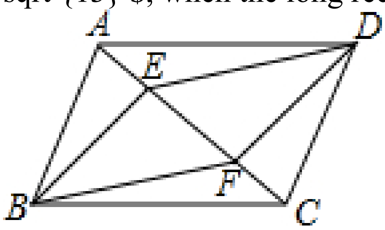
546, topic: FIG, AB is $ \ odot O $ diameter, chord BC =2cm, ∠ABC =60 ° #% # (1) required diameter $ \ odot O $ a; #% # (2) if. D AB is the point of an extension line connecting the CD, when the length is much BD, CD and $ \ odot O $ tangent? #% # (3) if the fixed point E at a speed of 2cm / s starting from point a along the the AB direction, while fixed point F at a speed of 1cm / s starting in the BC direction from the point B, set movement time t (s) $ (0 <t <2) $, connected EF, when what the value of t , △BEF is a right triangle? #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000060821_Q_1.jpg","coordinates":{"A":"-2.00,0.00","B":"2.00,0.00","C":"1.00,1.73","O":"0.00,0.00"},"collineations":{"0":"A###C","1":"B###A###O","2":"B###C"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"C###A###B"}]}],"appliedproblems":{}},"substems":[{"substemid":"2","questionrelies":"","pictures":[{"picturename":"1000060821_Q_1.jpg","coordinates":{"D":"4.00,0.00"},"collineations":{"0":"D###C","1":"A###D###O###B","2":"C###O"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},{"substemid":"3","questionrelies":"","pictures":[{"picturename":"1000060821_Q_1.jpg","coordinates":{"E":"0.00,0.00","F":"1.50,0.87"},"collineations":{"0":"F###E","1":"A###E###O###B","2":"C###F###B"},"variable-equals":{},"circles":[]}],"appliedproblems":{}}]}

NLP: DiameterRelation{diameter=AB, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, length=null},ChordOfCircleRelation{chord=BC, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, chordLength=null,straightLine=null},EqualityRelation{BC=2},EqualityRelation{∠CBO=(1/3*Pi)},圆的直径：CircleRelation{circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}},EqualityRelation{BD=v_0},PointOnLineRelation{point=D, line=AB, isConstant=false, extension=true},SegmentRelation:CD,LineContactCircleRelation{line=CD, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, contactPoint=Optional.of(C), outpoint=Optional.of(D)},Calculation:(ExpressRelation:[key:]v_0),ThreeItemsInequalityRelation{multiExpressCompare:0<t<2},RightTriangleRelation:RightTriangle:△BEF[Optional.absent()],SegmentRelation:EF,Calculation:(ExpressRelation:[key:]t),SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]AB)},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]BD)},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]t)}

547, topic: As shown in □ABCD, the points E, F on the straight line AC (point E on the left point F), BE∥DF #% # (1) Proof: BEDF quadrilateral is a parallelogram; #% # (2) if AB⊥AC, AB =4, $ BC =2 \sqrt {13} $, when the long rectangular BEDF is rectangular, the line segment AE to find. #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"4111B94343AF4BF3BFB281A0CA3BDA0F.jpg","coordinates":{"A":"-12.99,6.33","B":"-15.21,3.00","C":"-8.00,3.00","D":"-5.78,6.33","E":"-14.66,7.44","F":"-6.34,1.89"},"collineations":{"0":"A###B","1":"A###D","2":"E###A###C###F","3":"B###C","4":"B###F","5":"B###E","6":"C###D","7":"D###F","8":"D###E"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[{"substemid":"2","questionrelies":"1","pictures":[],"appliedproblems":{}}]}

NLP: PositionRelation [E在F的左方],ParallelogramRelation{parallelogram=Parallelogram:ABCD},PointOnLineRelation{point=E, line=AC, isConstant=false, extension=false},PointOnLineRelation{point=F, line=AC, isConstant=false, extension=false},LineParallelRelation [iLine1=BE, iLine2=DF],EqualityRelation{AE=v_0},LinePerpRelation{line1=AB, line2=AC, crossPoint=A},EqualityRelation{AB=4},EqualityRelation{BC=2*(13^(1/2))},RectangleRelation{rectangle=Rectangle:BEDF},Calculation:(ExpressRelation:[key:]v_0),ProveConclusionRelation:[Proof: ParallelogramRelation{parallelogram=Parallelogram:BEDF}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]AE)}

548, topic: is known in the quadrangle ABCD, ∠ABC + ∠ADC =180 °, ∠BAD + ∠BCD =180 °, AB =BC #% # (1) shown in Figure 1, connected to the BD, if ∠BAD =90 °. , AD =7, find the length of DC;% # # (2) in FIG. 2, the point P, Q, respectively, the AD line segment, the DC, to meet PQ =AP + CQ, confirmation: ∠PBQ =∠ABP + ∠QBC; # % # (3) If the point Q on an extended line of DC, DA point P on the extension line, as shown in FIG. 3, and still meet PQ =AP + CQ, please state the relationship between the number of ∠PBQ and ∠ADC, and the proof is given. #% # <img>

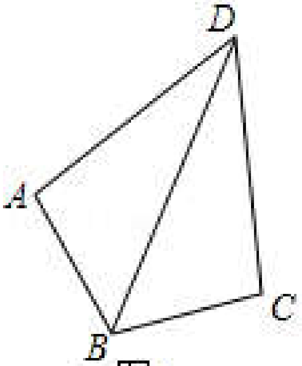


图1

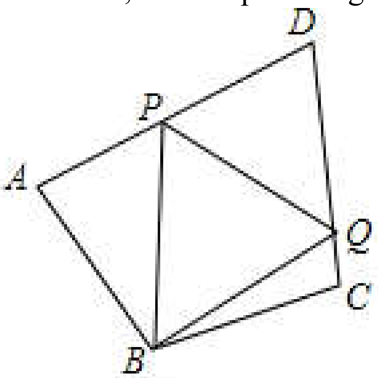


图2

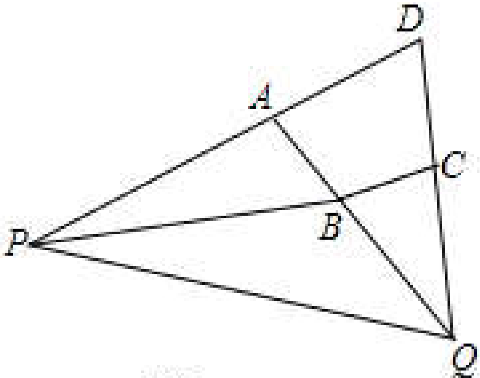


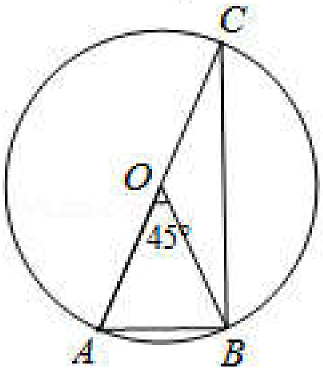
图3

graph:
{"stem":{"pictures":[],"appliedproblems":{}},"substems":[{"substemid":"1","questionrelies":"","pictures":[{"picturename":"1000080155_Q_1.jpg","coordinates":{"A":"-2.15,5.60","B":"-0.92,3.85","C":"1.20,4.15","D":"0.71,7.62"},"collineations":{"0":"D###A","1":"A###B","2":"D###B","3":"B###C","4":"D###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},{"substemid":"2","questionrelies":"","pictures":[{"picturename":"1000080155_Q_1.jpg","coordinates":{"A":"-6.00,2.47","B":"-5.00,0.47","C":"-2.78,0.72","D":"-3.14,3.89","P":"-4.63,3.15","Q":"-2.87,1.56"},"collineations":{"0":"A###B","1":"A###P###D","2":"D###Q###C","3":"B###C","4":"B###P","5":"P###Q","6":"B###Q"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},{"substemid":"3","questionrelies":"","pictures":[{"picturename":"1000080155_Q_1.jpg","coordinates":{"A":"-4.06,-1.86","B":"-3.35,-2.63","C":"-2.33,-2.40","D":"-2.73,-0.63","P":"-7.06,-4.61","Q":"-1.94,-4.17"},"collineations":{"0":"P###Q","1":"P###A###D","2":"D###C###Q","3":"B###C","4":"B###P","5":"A###B###Q"},"variable-equals":{},"circles":[]}],"appliedproblems":{}}]}

NLP: Know:QuadrilateralRelation{quadrilateral=ABCD},EqualityRelation{∠ABC+∠ADC=(Pi)},EqualityRelation{∠BAD+∠BCD=(Pi)},EqualityRelation{AB=BC},EqualityRelation{CD=v_0},(ExpressRelation:[key:]1),SegmentRelation:BD,EqualityRelation{∠BAD=(1/2*Pi)},EqualityRelation{AD=7},Calculation:(ExpressRelation:[key:]v_0),(ExpressRelation:[key:]2),PointOnLineRelation{point=P, line=AD, isConstant=false, extension=false},PointOnLineRelation{point=Q, line=DC, isConstant=false, extension=false},EqualityRelation{PQ=AP+CQ},PointOnLineRelation{point=Q, line=DC, isConstant=false, extension=true},PointOnLineRelation{point=P, line=DA, isConstant=false, extension=true},Know:AbsFunctionRelation{AbsFunction=AbsFunction[]:[y=3]Domain:R},JudgeTwoAnglesConnectRelation{ [∠PBQ,∠

ADC]},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]CD)},ProveConclusionRelation:[Proof: EqualityRelation{∠PBQ=∠ABP+∠QBC}],ProveConclusionRelation:[Proof: JudgeTwoAnglesConnectRelation{ [∠PBQ,∠ADC]}]

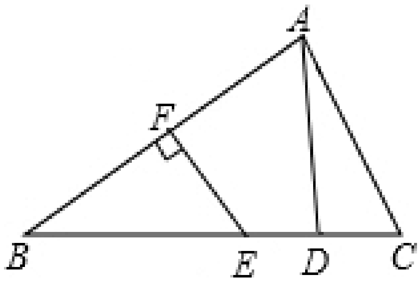
549, topic: as shown, in a radius of $ ⊙O $ 1, $ ∠AOB =45 ° $, $ find \ value of sin C $.



graph:
{"stem":{"pictures":[{"picturename":"1000025044.jpg","coordinates":{"A":"-1.53,-3.70","B":"1.53,-3.70","C":"1.53,3.70","O":"0.00,0.00"},"collineations":{"0":"A###O###C","1":"C###B","2":"B###A","3":"O###B"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"A###B###C"}]}],"appliedproblems":{}},"substems":[]}

NLP: CircleRelation{circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2, radiusLength=Express:[1], diameterLength=Express:[2]}},EqualityRelation{∠AOB=(1/4*Pi)},Calculation:(ExpressRelation:[key:]sin(∠BCO)),SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]sin(∠BCO))}

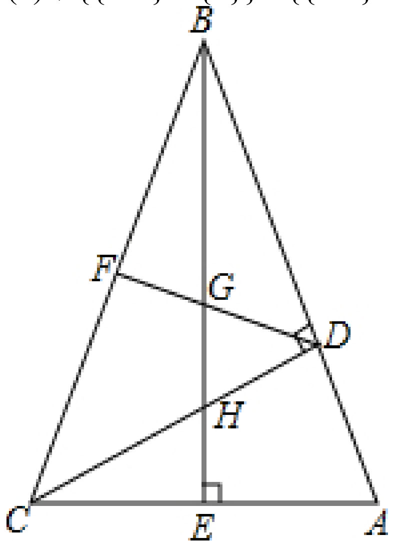
550, topic: As shown in the △ABC, AB perpendicular bisector EF BC at point E, at cross points AB F, D is the midpoint of the line segment CE, AD⊥BC Proof:. BE =AC #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000072737_Q_1.jpg","coordinates":{"A":"-7.67,8.60","B":"-14.23,4.00","C":"-6.00,4.00","D":"-7.67,4.00","E":"-9.34,4.00","F":"-10.95,6.30"},"collineations":{"0":"A###C","1":"A###D","2":"E###F","3":"A###F###B","4":"C###D###E###B"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: MiddlePerpendicularRelation [iLine1=EF, iLine2=AB, crossPoint=Optional.of(F)],TriangleRelation:△ABC,LineCrossRelation [crossPoint=Optional.of(E), iLine1=EF, iLine2=BC],LineCrossRelation [crossPoint=Optional.of(F), iLine1=EF, iLine2=AB],MiddlePointOfSegmentRelation{middlePoint=D,segment=CE},LinePerpRelation{line1=AD, line2=BC, crossPoint=D},ProveConclusionRelation:[Proof: EqualityRelation{BE=AC}]

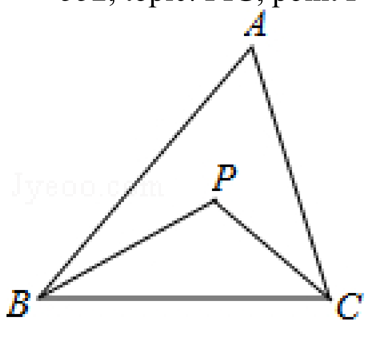
551, topic: As shown in the △ABC, ∠ABC =45 °, CD⊥AB, BE⊥AC, pedal respectively D, E, F midpoint of BC, BE and DF, DC were at point . G, H, ∠ABE =∠CBE Proof: #% # (1) BH =CA; #% # (2) $ {{BG} ^ {2}} - {{GE} ^ {2}} ={ {EA} ^ {2}} $. #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000080241_Q_1.jpg","coordinates":{"A":"-7.25,-1.32","B":"-9.42,3.44","C":"-11.25,-1.46","D":"-7.89,0.07","E":"-9.25,-1.39","F":"-10.34,0.99","G":"-9.32,0.61","H":"-9.28,-0.56"},"collineations":{"0":"B###G###H###E","1":"B###F###C","2":"B###D###A","3":"A###E###C","4":"D###G###F","5":"D###H###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleRelation:△ABC,EqualityRelation{∠DBF=(1/4*Pi)},LinePerpRelation{line1=CD, line2=AB, crossPoint=D},LinePerpRelation{line1=BE, line2=AC, crossPoint=E},MiddlePointOfSegmentRelation{middlePoint=F,segment=BC},LineCrossRelation [crossPoint=Optional.of(G), iLine1=BE, iLine2=DF],LineCrossRelation [crossPoint=Optional.of(H), iLine1=BE, iLine2=DC],EqualityRelation{∠DBG=∠FBG},ProveConclusionRelation:[Proof: EqualityRelation{BH=AC}],ProveConclusionRelation:[Proof: EqualityRelation{((BG)^2)-((EG)^2)=((AE)^2)}]

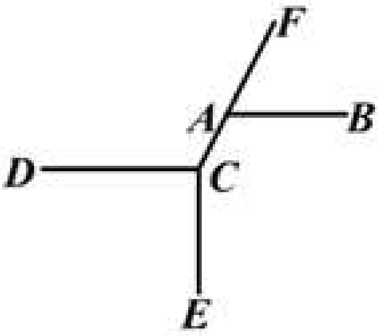
552, topic: FIG, point P is a point △test described AB + AC＞PB + PC within ABC #% # <img>..



graph:
{"stem":{"pictures":[{"picturename":"44E6EA235B2B4A55A6597EED52B75865.jpg","coordinates":{"A":"-10.00,7.00","B":"-14.00,3.00","C":"-9.00,9.00","P":"-10.56,4.63"},"collineations":{"0":"A###C","1":"A###B","2":"B###C","3":"C###P","4":"B###P"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleRelation:△ABC,PositionOfPoint2RegionRelation{point=P, region=EnclosedRegionRelation{name=ABC, closedShape=△ABC}, position=inner},ProveConclusionRelation:[Proof: InequalityRelation{AB+AC>BP+CP}]

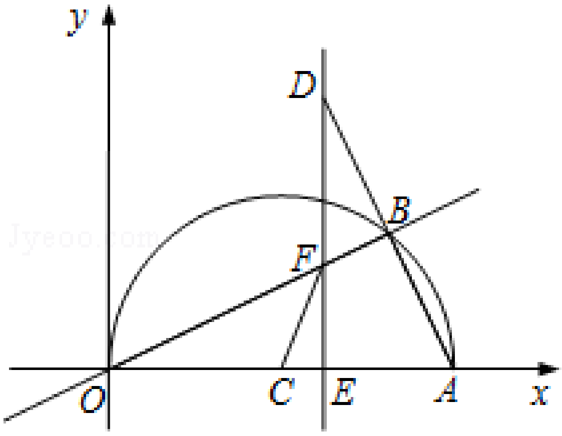
553, topic: FIG known $ ∠BAF =46 ° $, $ ∠ACE =136 ° $, $ CE⊥CD $ Proof: $ CD // AB $.



graph:
{"stem":{"pictures":[{"picturename":"1000022467_Q_1.jpg","coordinates":{"A":"0.00,0.00","B":"5.00,0.00","C":"-2.95,-3.05","D":"-7.00,-3.05","E":"-2.95,-7.29","F":"3.47,3.60"},"collineations":{"0":"A###F###C","1":"A###B","2":"D###C","3":"C###E"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: EqualityRelation{∠BAF=(23/90*Pi)},EqualityRelation{∠ACE=(34/45*Pi)},LinePerpRelation{line1=CE, line2=CD, crossPoint=C},ProveConclusionRelation:[Proof: LineParallelRelation [iLine1=CD, iLine2=AB]]

554, topic: As shown in the plane rectangular coordinate system, the point A (10,0), to make a diameter of a semicircle OA C in the first quadrant, the point B is the point of the semi-circumference of a dynamic connection OB, AB, AB and extended to the point D, so that DB =AB, through point D as the x-axis vertical, respectively, cross the x-axis, a straight line OB at points E, F, point E is the pedal, the connecting CF. #% # (1) when when ∠AOB =30 °, seeking $ \widehat {AB} $ length;% # # (2) when DE =8, the line segment EF seek length; #% # (3) at the point B during movement, and whether there is an intersection between E O, C when the point E, C, F and similar to the triangle having vertices △AOB, if present, the coordinates of a request at this time point E, if not, please explain the reasons. #% # <img>

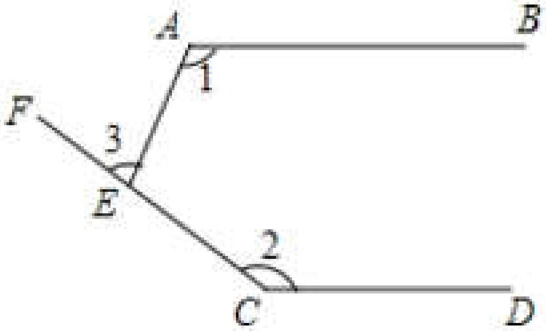


graph:
{"stem":{"pictures":[],"appliedproblems":{}},"substems":[{"substemid":"1","questionrelies":"","pictures":[{"picturename":"1000080891_Q_1.jpg","coordinates":{"A":"5.00,0.00","B":"3.75,2.17","C":"2.50,0.00","D":"2.50,4.33","F":"2.50,1.44","O":"0.00,0.00","E":"2.50,0.00"},"collineations":{"0":"C###F###D","1":"B###F###O","2":"O###C###A","3":"D###B###A","4":"D###F###E","5":"A###E###O"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},{"substemid":"2","questionrelies":"","pictures":[{"picturename":"1000080891_Q_1.jpg","coordinates":{"A":"5.00,0.00","B":"4.00,2.00","C":"2.50,0.00","D":"3.00,4.00","E":"3.00,0.00","F":"3.00,1.50","O":"0.00,0.00"},"collineations":{"0":"F###C","1":"O###C###E###A","2":"D###B

###A","3":"D###F###E","4":"O###F###B"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},{"substemid":"3","questionrelies":"","pictures":[{"picturename":"1000080891_Q_1.jpg","coordinates":{"A":"5.00,0.00","B":"2.99,2.45","C":"2.50,0.00","D":"1.00,4.91","E":"1.00,0.00","F":"1.00,0.82","O":"0.00,0.00"},"collineations":{"0":"D###F###E","1":"O###F###B","2":"O###E###C###A","3":"A###B###D"},"variable-equals":{},"circles":[]}],"appliedproblems":{}}]}

NLP: PointRelation:A(10,0),SegmentRelation:OB,SegmentRelation:AB,PointOnLineRelation{point=D, line=AB, isConstant=false, extension=true},EqualityRelation{BD=AB},LinePerpRelation{line1=StraightLine[n_0] analytic :x=x_n_0 slope:null b:null isLinearFunction:false, line2=StraightLine[X] analytic :y=0 slope:0 b:0 isLinearFunction:false, crossPoint=},PointOnLineRelation{point=D, line=StraightLine[n_0] analytic :y=k_n_0*x+b_n_0 slope:null b:null isLinearFunction:false, isConstant=false, extension=false},PointOnLineRelation{point=E, line=OB, isConstant=false, extension=false},PointRelation:F,SegmentRelation:CF,EqualityRelation{∠COF=(1/6*Pi)},Calculation:(ExpressRelation:[key:]⌒AB),EqualityRelation{EF=v_1},EqualityRelation{DE=8},Calculation:(ExpressRelation:[key:]v_1),PointRelation:B,CircleRelation{circle=Circle[⊙C]{center=C, analytic=(x-x_C)^2+(y-y_C)^2=r_C^2}},Coordinate:PointRelation:E,SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]⌒AB)},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]EF)},SolutionConclusionRelation{relation=Coordinate:PointRelation:E}

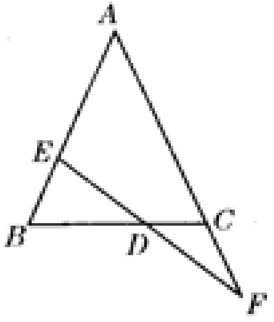
555, topic: FIG, AB // CD, ∠1 =115 °, ∠2 =140 °, the required degree ∠3 #% # <img>.



graph: {"stem":{"pictures":[{"picturename":"48EC7F7CB20F47659D5657F6DAF38493.jpg","coordinates":{"A":"-14.00,6.00","B":"-8.00,6.00","C":"-13.00,3.00","D":"-7.00,3.00","E":"-14.72,4.45","F":"-15.97,5.49"},"collineations":{"0":"A###B","1":"A###E","2":"D###C","3":"F###E###C"},"variable-equals":{"0":"∠1=∠BAE","1":"∠2=∠ECD","2":"∠3=∠AEF"},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: LineParallelRelation [iLine1 =AB, iLine2 =CD], EqualityRelation {∠BAE =(23/36 * Pi)}, EqualityRelation {∠DCE =(7/9 * Pi)}, the size of the required angle: (ExpressRelation: [key:] ∠AEF), SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] ∠AEF)}

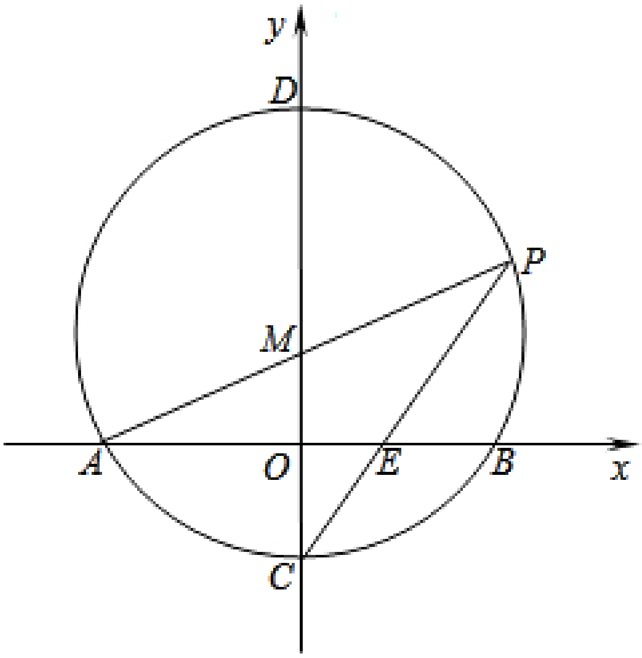
556, topic: FIG known ∠B =∠ACB, DE =DF, confirmation: BE =CF #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000040001_Q_1.jpg","coordinates":{"A":"-8.00,6.00","B":"-10.00,2.00","C":"-6.00,2.00","D":"-7.36,2.01","E":"-9.36,3.29","F":"-5.36,0.73"},"collineations":{"0":"A###C###F","1":"B###D###C","2":"E###D###F","3":"A###E###B"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: EqualityRelation{∠DBE=∠ACD},EqualityRelation{DE=DF},ProveConclusionRelation:[Proof: EqualityRelation{BE=CF}]

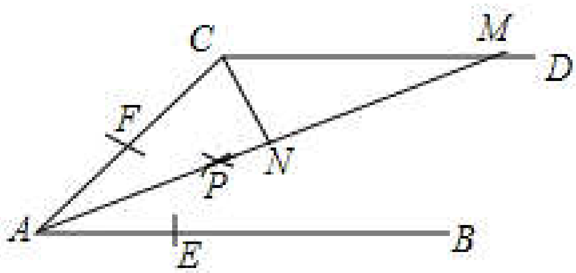
557, topic: As shown in the plane rectangular coordinate system, a point $ M (0, \ sqrt {3}) $ as the center, to $ 2 \ sqrt {3} $ length radius for the x-axis at A cross ⊙ M , B two, cross-y axis in C, D two, cross-connect and extend ⊙ M AM in the P point PC connected to cross the x-axis E #% # (1) find points C, the coordinates P;. #% # (2) Proof: BE =2OE #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000052507_Q_1.jpg","coordinates":{"A":"-3.00,0.00","B":"3.00,0.00","C":"0.00,-1.73","D":"0.00,5.19","E":"1.00,0.00","P":"3.00,3.46","O":"0.00,0.00","M":"0.00,1.73"},"collineations":{"0":"A###O###E###B","1":"D###M###O###C","2":"A###M###P","3":"P###E###C"},"variable-equals":{},"circles":[{"center":"M","pointincircle":"A###C###B###P###D"}]}],"appliedproblems":{}},"substems":[]}

NLP: CoorSysTypeRelation [name=xOy, types=直角Coordinate:系],CircleCenterRelation{point=M(0,(3^(1/2))), conic=Circle[⊙M]{center=M, analytic=(x-x_M)^2+(y-y_M)^2=r_M^2}},LineCrossCircleRelation{line=StraightLine[Y] analytic :x=0 slope: b: isLinearFunction:false, circle=⊙M, crossPoints=[C], crossPointNum=1},LineCrossCircleRelation{line=AM, circle=⊙M, crossPoints=[P], crossPointNum=1},LineCrossRelation [crossPoint=Optional.of(E), iLine1=PC, iLine2=StraightLine[X] analytic :y=0   slope:0   b:0 isLinearFunction:false],Coordinate:PointRelation:C,Coordinate:PointRelation:P,SolutionConclusionRelation{relation=Coordinate:PointRelation:C},SolutionConclusionRelation{relation=Coordinate:PointRelation:P},ProveConclusionRelation:[Proof: EqualityRelation{BE=2*EO}]

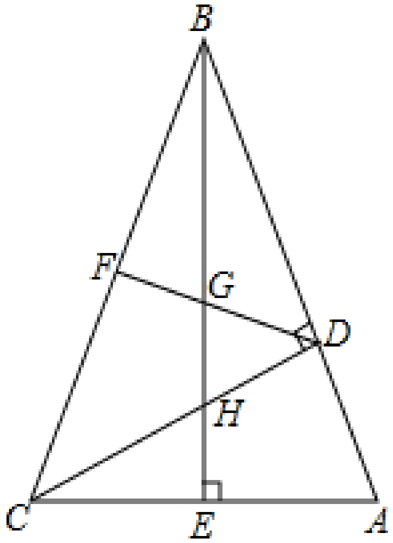
558, topic: FIG, AB∥CD, with A as the center, is less than the radius of the AC draw an arc length, respectively, cross-AB, AC at points E, F two points, respectively, and then points E, F as the center, greater than $\frac{1}{2}EF$ radius for the arc length, two arc at point P, rays for the AP, CD cross at point M. #% # (1) if ∠ACD =114 °, seek ∠MAB degree;% # # (2) if CN⊥AM, pedal is N, Proof: . △CAN≌△CMN #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000072666_Q_1.jpg","coordinates":{"A":"0.00,0.00","B":"5.00,0.00","C":"1.34,3.00","D":"6.00,3.00","E":"1.00,0.00","F":"0.41,0.91","M":"4.63,3.00","N":"2.31,1.50","P":"1.63,1.06"},"collineations":{"0":"B###E###A","1":"A###F###C","2":"C###M###D","3":"C###N","4":"A###P###N###M"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: RadiusRelation{radius=M_1N_1, circle=Circle[⊙O_0]{center=O_0, analytic=(x-x_O_0)^2+(y-y_O_0)^2=r_O_0^2}, length=null},EqualityRelation{AC=v_2},LineParallelRelation [iLine1=AB, iLine2=CD],CircleCenterRelation{point=A, conic=Circle[⊙O_0]{center=O_0, analytic=(x-x_O_0)^2+(y-y_O_0)^2=r_O_0^2}},CircleCenterRelation{point=F, conic=Circle[⊙O_0]{center=O_0, analytic=(x-x_O_0)^2+(y-y_O_0)^2=r_O_0^2}},SegmentRelation:AP,LineCrossRelation [crossPoint=Optional.of(M), iLine1=AP, iLine2=CD],EqualityRelation{∠FCM=(19/30*Pi)},Calculation:AngleRelation{angle=∠EAP},LinePerpRelation{line1=CN, line2=AM, crossPoint=N},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]∠EAP)},ProveConclusionRelation:[Proof: TriangleCongRelation{triangleA=△CAN, triangleB=△CMN}]

559, topic: As shown in the △ABC, ∠ABC =45 °, CD⊥AB, BE⊥AC, respectively pedal points D, E, F as the midpoint point of BC, BE and DF, DC were cross . at point G, H, ∠ABE =∠CBE Proof: #% # (1) BH =CA; #% # (2) ${{BG}^{2}}-{{GE}^{2}}={{EA}^{2}}$. #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000080241_Q_1.jpg","coordinates":{"A":"-7.25,-1.32","B":"-9.42,3.44","C":"-11.25,-1.46","D":"-7.89,0.07","E":"-9.25,-1.39","F":"-10.34,0.99","G":"-9.32,0.61","H":"-9.28,-0.56"},"collineations":{"0":"B###G###H###E","1":"B###F###C","2":"B###D###A","3":"A###E###C","4":"D###G###F","5":"D###H###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

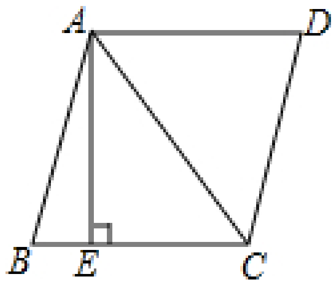
NLP: TriangleRelation:△ABC,EqualityRelation{∠DBF=(1/4*Pi)},LinePerpRelation{line1=CD, line2=AB, crossPoint=D},LinePerpRelation{line1=BE, line2=AC, crossPoint=E},MiddlePointOfSegmentRelation{middlePoint=F,segment=BC},LineCrossRelation [crossPoint=Optional.of(G), iLine1=BE, iLine2=DF],LineCrossRelation [crossPoint=Optional.of(H), iLine1=BE, iLine2=DC],EqualityRelation{∠DBG=∠FBG},ProveConclusionRelation:[Proof: EqualityRelation{BH=AC}],ProveConclusionRelation:[Proof: EqualityRelation{((BG)^2)-((EG)^2)=((AE)^2)}]

560, topic: is known, the segment $ AB =10cm $, there is little on the line AB C, and $ BC =4cm $, M is the midpoint of the line segment AC, AM segment length requirements.

graph:
{"stem":{"pictures":[{"picturename":"1000010199_Q_1.jpg","coordinates":{"A":"0.00,0.00","B":"10.00,0.00","C":"6.00,0.00","M":"3.00,0.00"},"collineations":{"0":"B###A###M###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: EqualityRelation{AM=v_0},EqualityRelation{AB=10},PointOnLineRelation{point=C, line=AB, isConstant=false, extension=false},EqualityRelation{BC=4},MiddlePointOfSegmentRelation{middlePoint=M,segment=AC}, Calculation:(ExpressRelation:[key:]v_0),SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]AM)}

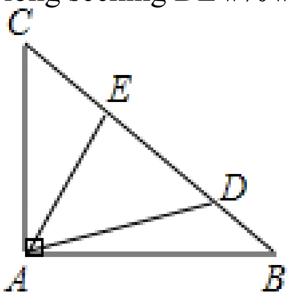
561, topic: FIG., In the diamond ABCD, AB =5, diagonals AC =6 for the point A is too AE⊥BC, pedal point E, a long seek AE #% # <img>..



graph:
{"stem":{"pictures":[{"picturename":"1000034572_Q_1.jpg","coordinates":{"A":"-3.03,3.64","B":"-4.34,-1.08","C":"0.66,-1.08","D":"1.93,3.64","E":"-3.03,-1.08"},"collineations":{"0":"B###A","1":"A###D","2":"A###C","3":"A###E","4":"B###E###C","5":"D###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP:
EqualityRelation{AE=v_0},RhombusRelation{rhombus=Rhombus:ABCD},EqualityRelation{AB=5},EqualityRelation{AC=6},LinePerpRelation{line1=AE, line2=BC, crossPoint=E},Calculation:(ExpressRelation:[key:]v_0),SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]AE)}

562, topic: FIG at Rt △ABC is known ∠BAC =90 °, AC =AB, ∠DAE =45 °, and BD =3, CE =4, long seeking DE #% # <img. >



graph:
{"stem":{"pictures":[{"picturename":"1000062494_Q_1.jpg","coordinates":{"A":"-9.00,0.00","B":"0.00,0.00","C":"-9.00,8.94","D":"-2.12,2.11","E":"-5.69,5.65"},"collineations":{"0":"A###B","1":"C###A","2":"A###E","3":"A###D","4":"B###D###E###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP:
EqualityRelation{DE=v_0},RightTriangleRelation:RightTriangle:△ABC[Optional.of(A)],EqualityRelation{∠BAC=(1/2*Pi)},EqualityRelation{AC=AB},EqualityRelation{∠DAE=(1/4*Pi)},EqualityRelation{BD=3},EqualityRelation{CE=4},Calculation:(ExpressRelation:[key:]v_0),SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]DE)}

563, topic: FIG known ∠MAN =120 °, AC bisecting ∠MAN, B, D, respectively, in the ray AN, AM #% # (1) in FIG. 1, when ∠ABC =∠ADC =90. when °, Proof: AD + AB =AC #% # (2) when the (1) condition "∠ABC =∠ADC =90 °" to "∠ABC + ∠ADC =180 °", other conditions are not change, shown in Figure 2, then (1) the conclusions are still valid if established, give proof;? if established, please explain the reason #% # <img>.

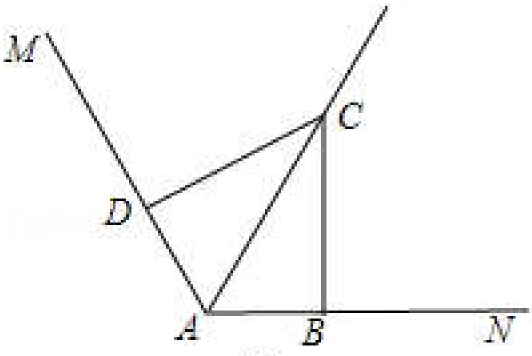


图1

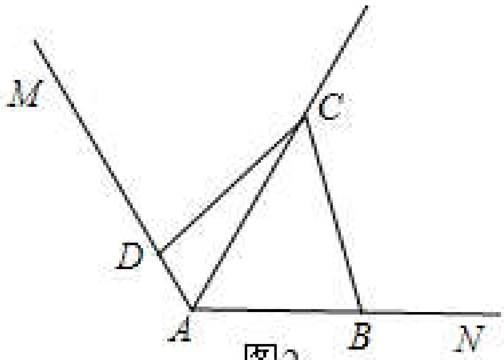
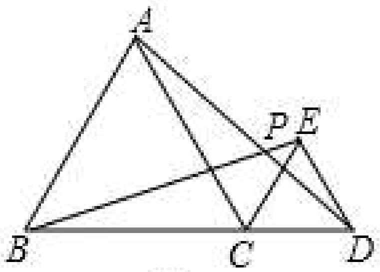


图2

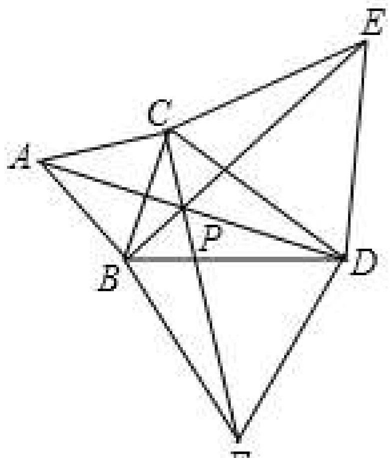
graph:
{"stem":{"pictures":[{"picturename":"1000031262_Q_1.jpg","coordinates":{"A":"-9.00,2.00","N":"-4.00,2.00","M":"-11.50,6.33"},"collineations":{"0":"M###A","1":"N###A"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[{"substemid":"1","questionrelies":"","pictures":[{"picturename":"1000031262_Q_1.jpg","coordinates":{"B":"-7.28,2.00","C":"-7.28,4.98","D":"-9.86,3.49"},"collineations":{"0":"M###D###A","1":"A###B###N","2":"C###D","3":"C###B","4":"C###A"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},{"substemid":"2","questionrelies":"","pictures":[{"picturename":"1000031262_Q_1.jpg","coordinates":{"B":"-6.32,2.00","C":"-7.36,4.84","D":"-9.30,2.53"},"collineations":{"0":"M###D###A","1":"A###B###N","2":"C###D","3":"C###B","4":"C###A"},"variable-equals":{},"circles":[]}],"appliedproblems":{}}]}

NLP: EqualityRelation{∠MAN=(2/3*Pi)},AngleBisectorRelation{line=AC,angle=∠MAN, angle1=∠CAM, angle2=∠CAN},PointOnLineRelation{point=B, line=AN, isConstant=false, extension=false},PointOnLineRelation{point=D, line=AM, isConstant=false, extension=false},(ExpressRelation:[key:]1),MultiEqualityRelation [multiExpressCompare=∠ABC=∠ADC=(1/2*Pi), originExpressRelationList=[], keyWord=null, result=null],Know:AbsFunctionRelation{AbsFunction=AbsFunction[]:[y=2]Domain:R},ProveConclusionRelation:[Proof: EqualityRelation{AD+AB=AC}]

564, topic: (1) in FIG. (1), △ABC and △CDE are equilateral triangles, and B, C, D are collinear, connected to AD, BE at point P, confirmation: BE =AD; #% # (2) shown in (2), in the △BCD, ∠BCD <120 °, respectively, BC, CD and BD to make the outer edge in △BCD equilateral triangle ABC, CDE equilateral triangle and an equilateral triangle BDF, coupling AD, bE and CF intersect at the point P, the following conclusions are correct _____ (fill ID); #% # ① AD =bE =CF; ② ∠BEC =∠ADC; ③ ∠DPE =∠EPC =∠ CPA =60 ° #% # (3) in FIG. (2) in (2) the condition Proof:. PB + PC + PD =BE #% # <img>



图(1)



图(2)

graph:
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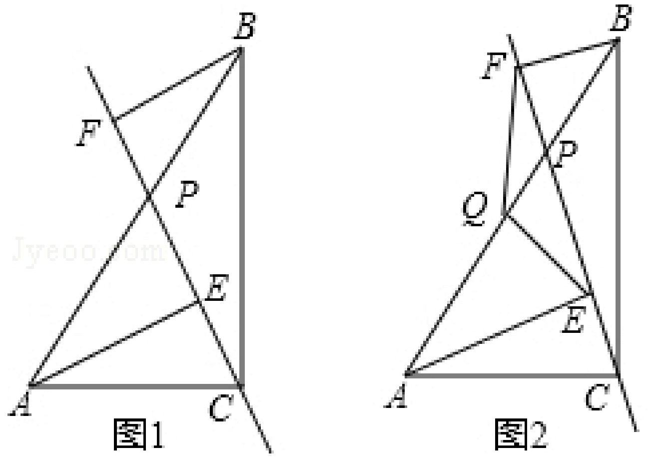
NLP:
RegularTriangleRelation:RegularTriangle:△ABC,RegularTriangleRelation:RegularTriangle:△CDE,MultiPointCollinearRelation:[B, C, D],LineCrossRelation [crossPoint=Optional.of(P), iLine1=AD, iLine2=BE],TriangleRelation:△BCD,InequalityRelation{∠BCD<(2/3*Pi)},RegularTriangleRelation:RegularTriangle:△CDE,RegularTriangleRelation:RegularTriangle:△BDF,SegmentRelation:AD,LineCrossRelation [crossPoint=Optional.of(P), iLine1=BE, iLine2=CF],SubStemReliedRelation{selfDivideId=-1, reliedDivideId=2},MultiEqualityRelation [multiExpressCompare=AD=BE=CF*∠CEP=∠CDP*∠DPE=∠EPC=∠CPA=(1/3*Pi), originExpressRelationList=[], keyWord=null, result=null],SubStemReliedRelation{selfDivideId=-1, reliedDivideId=2},ProveConclusionRelation:[Proof: EqualityRelation{BE=AD}],ProveConclusionRelation:[Proof: EqualityRelation{BP+CP+DP=BE}]

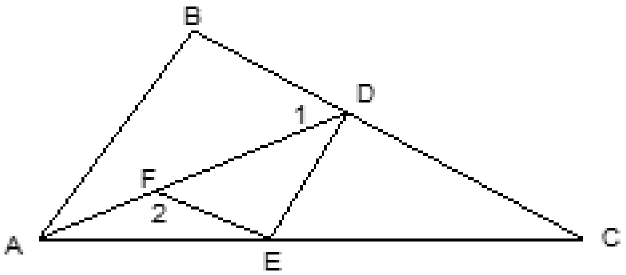
565, topic: Rt △P is a known point on the hypotenuse AB ABC a fixed point (not with A, B overlap), respectively, through the A, B perpendicular to the straight line as CP, respectively, pedal E, F #% #. (1) when the point P is the midpoint of AB, 1, connected to AE, BF Proof: AEBF quadrilateral is a parallelogram% # # (2) when the point P is not a point of AB, 2,. Q is the midpoint of AB Proof: . △QEF isosceles triangle #% # <img>.



graph:
{"stem":{"pictures":[],"appliedproblems":{}},"substems":[{"substemid":"1","questionrelies":"","pictures":[{"picturename":"1000031963_Q_1.jpg","coordinates":{"A":"-13.00,3.00","B":"-10.00,8.00","C":"-10.00,3.00","E":"-10.79,4.32","F":"-12.21,6.68","P":"-11.50,5.50"},"collineations":{"0":"F###P###E###C","1":"B###P###A","2":"B###F","3":"B###C","4":"A###E","5":"A###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},{"substemid":"2","questionrelies":"","pictures":[{"picturename":"1000031963_Q_1.jpg","coordinates":{"A":"-13.00,3.00","B":"-10.00,8.00","C":"-10.00,3.00","E":"-10.20,3.75","F":"-11.24,7.67","P":"-10.92,6.46","Q":"-11.50,5.50"},"collineations":{"0":"B###P###Q###A","1":"F###P###E###C","2":"F###Q","3":"F###B","4":"B###C","5":"Q###E","6":"A###E","7":"A###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}}]}

NLP:
PointRelation:A,PointRelation:B,RightTriangleRelation:RightTriangle:△ABC[Optional.of(C)],PointOnLineRelation{point=P, line=AB, isConstant=false, extension=false},MiddlePointOfSegmentRelation{middlePoint=P,segment=AB},(ExpressRelation:[key:]1),SegmentRelation:AE,SegmentRelation:BF,MiddlePointOfSegmentRelation{middlePoint=Q_0,segment=AB},NegativeRelation{relation=PointCoincidenceRelation{point1=P, point2=Q_0}},(ExpressRelation:[key:]2),MiddlePointOfSegmentRelation{middlePoint=Q,segment=AB},ProveConclusionRelation:[Proof: ParallelogramRelation{parallelogram=Parallelogram:AEBF}],ProveConclusionRelation:[IsoscelesTriangleRelation:IsoscelesTriangle:△QEF[Optional.absent()]]

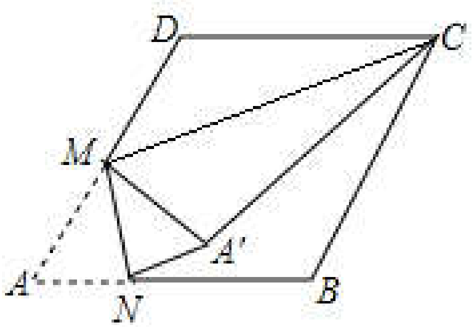
566, topic: FIG, ∠1 + ∠2 =180 °, ∠B =∠DEF, ∠BAC =55 °, the degree of seeking ∠DEC #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000035801_Q_1.jpg","coordinates":{"A":"-4.29,-1.64","B":"-2.41,1.04","C":"1.71,-1.64","D":"-0.35,-0.30","E":"-1.29,-1.64","F":"-2.32,-0.97"},"collineations":{"0":"A###E###C","1":"A###F###D","2":"A###B","3":"E###D","4":"F###E","5":"C###B###D"},"variable-equals":{"0":"∠1=∠BDA","1":"∠2=∠AFE"},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: EqualityRelation {∠BDF + ∠AFE =(Pi)}, EqualityRelation {∠ABD =∠DEF}, EqualityRelation {∠BAE =(11/36 * Pi)}, find the size of the angle: AngleRelation {angle =∠CED}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] ∠CED)}

567, topic: As shown, the side length of a rhombus ABCD 2, ∠A =60 °, the point M is the midpoint of the AD side, a point N is fixed point on the side AB, the AMN △straight line MN is located in turn off to give $ \ vartriangle A'MN $, connected $ A'C $, MC #% # (1) find the length of the MC;. #% # (2) for the minimum length of $ A'C $ #% #. <img>

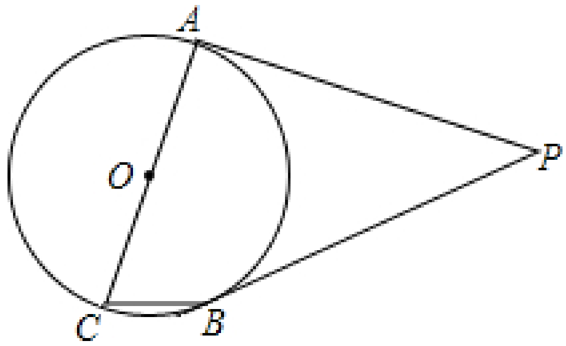


graph:
{"stem":{"pictures":[{"picturename":"1000034738_Q_1.jpg","coordinates":{"A":"1.00,0.00","B":"9.00,0.00","C":"13.00,6.93","D":"5.00,6.93","M":"3.00,3.46","N":"5.86,0.00","A_1":"6.78,4.78"},"collineations":{"0":"D###C","1":"B###C","2":"N###A_1","3":"A###M###D","4":"A###N###B","5":"M###A_1","6":"A_1#

##C","7":"M###N"},"conic":{"sureCoor":"A#0#0#B#2#0#C#3#3^(1/2)#D#1#3^(1/2)#M#1/2#3^(1/2)/2#N #t_0#0"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: RhombusRelation{rhombus=Rhombus:ABCD},EqualityRelation{AB=2},EqualityRelation{∠MAN=(1/3*Pi)},MiddlePointOfSegmentRelation{middlePoint=M,segment=AD},PointOnLineRelation{point=N, line=AB, isConstant=false, extension=false},TurnoverRelation{start=A, segment=MN,target=A'},SegmentRelation:A'C,SegmentRelation:MC,EqualityRelation{CM=v_0},Calculation:(ExpressRelation:[key:]v_0),EqualityRelation{A'C=v_1},Minimum:(ExpressRelation:[key:]v_1[v_1=v_1]),SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]CM)},SolutionConclusionRelation{relation=Minimum:(ExpressRelation:[key:]v_1[v_1=v_1])}

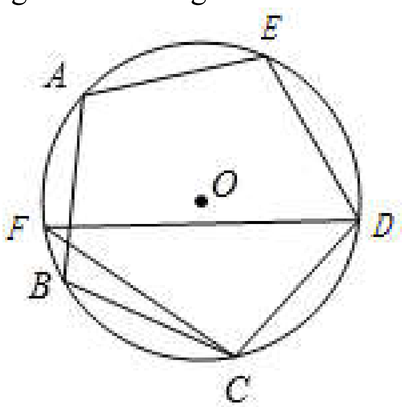
568, topic: FIG, PA, PB is ⊙O tangent points A, B is a cut point, the AC is the diameter of ⊙O, ∠ACB =70 °, the required degree ∠P #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000081004_Q_1.jpg","coordinates":{"A":"-5.82,3.10","B":"-5.52,-3.41","C":"-7.88,-3.52","P":"3.27,0.26","O":"-6.85,-0.21"},"collineations":{"0":"C###O###A","1":"C###B","2":"A###P","3":"B###P"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"A###B###C"}]}],"appliedproblems":{}},"substems":[]}

NLP: LineContactCircleRelation{line=PA, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, contactPoint=Optional.of(A), outpoint=Optional.of(P)},LineContactCircleRelation{line=PB, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, contactPoint=Optional.of(B), outpoint=Optional.of(P)},PointRelation:A,PointRelation:B,DiameterRelation{diameter=AC, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, length=null},EqualityRelation{∠BCO=(7/18*Pi)},Calculation:AngleRelation{angle=∠APB},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]∠APB)}

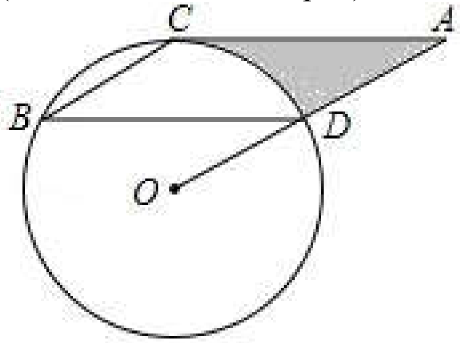
569, topic: FIG regular pentagon ABCDE connected to the ⊙O, at point F $ \ widehat {AB} $, the degree of seeking ∠CFD #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000083453_Q_1.jpg","coordinates":{"A":"-0.67,3.72","B":"-1.81,0.23","C":"1.16,-1.94","D":"4.14,0.22","E":"3.00,3.72","F":"-1.95,0.88","O":"1.16,1.19"},"collineations":{"0":"B###A","1":"B###C","2":"C###D","3":"D###E","4":"E###A","5":"D###F","6":"C###F"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"A###F###B###C###D###E"}]}],"appliedproblems":{}},"substems":[]}

NLP: PointOnArcRelation {point =F, arc =type: MAJOR_ARC⌒ AB}, ANGULAR size: AngleRelation {angle =∠CFD}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] ∠CFD) }

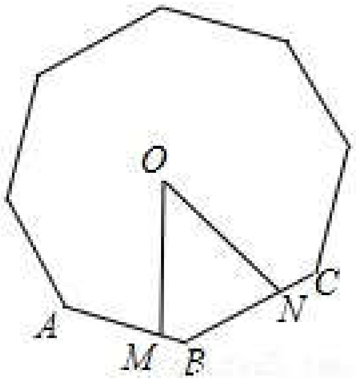
570, topic: FIG, point B, C, D are in the $ ⊙O $, for an extension line through point C $ CA∥BD $ OD in cross point A, the connection BC, $ ∠B =∠A =30 ° $, $ BD =2 \ sqrt {3} $ #% # (1) Prove:.?? AC is $ ⊙O $ tangent;% # # (2) required by the segment AC, AD and enclosed arc CD into the perimeter shaded. (results reservations $ \ pi $)



graph:
{"stem":{"pictures":[{"picturename":"1000025058.jpg","coordinates":{"A":"3.46,2.00","B":"-1.73,1.00","C":"0.00,2.00","D":"1.73,1.00","O":"0.00,0.00"},"collineations":{"0":"B###C","1":"B###D","2":"A###C","3":"A###D###O"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"C###D###B"}]}],"appliedproblems":{}},"substems":[]}

NLP: PointOnCircleRelation{circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, points=[B]},PointOnCircleRelation{circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, points=[C]},PointOnCircleRelation{circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, points=[D]},PointOnLineRelation{point=C, line=CA, isConstant=false, extension=false},LineParallelRelation [iLine1=CA, iLine2=BD],LineCrossRelation [crossPoint=Optional.of(A), iLine1=CA, iLine2=OD],SegmentRelation:BC,MultiEqualityRelation [multiExpressCompare=∠CBD=∠CAD=(1/6*Pi), originExpressRelationList=[], keyWord=null, result=null],EqualityRelation{BD=2*(3^(1/2))},ProveConclusionRelation:[Proof: LineContactCircleRelation{line=AC, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, contactPoint=Optional.of(C), outpoint=Optional.of(A)}]

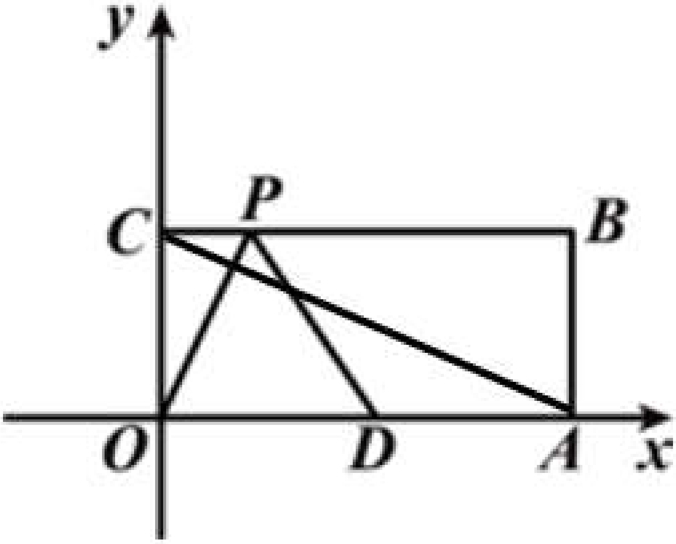
571, topic: FIG, points M, N are positive octagon adjacent sides AB, the point on the BC, cut $ AM =BN $, O is octagonal center is seeking $ ∠MON $ degrees .



graph:
{"stem":{"pictures":[{"picturename":"1000008305_Q_1.jpg","coordinates":{"A":"-2.83,-2.83","B":"0.00,-4.00","C":"2.83,-2.83","M":"-0.98,-3.60","N":"1.85,-3.23","O":"0.00,0.00"},"collineations":{"0":"M###A###B","1":"N###C###B","2":"O###M","3":"N###O"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: PointOnLineRelation {point =M, line =AB, isConstant =false, extension =false}, PointOnLineRelation {point =N, line =BC, isConstant =false, extension =false}, ANGULAR size: AngleRelation {angle =∠ MON}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] ∠MON)}

572, topic: As shown in the plane rectangular coordinate system, the point O is the origin of coordinates, a rectangular quadrilateral OABC, the points A, C are $ coordinates (10,0) $, $ (0,4) $.? #% # (1) find the coordinates of the midpoint of a line segment of length AC and the AC.? #% # (2) point D is the midpoint of OA, the point P in the BC side of the movement. when the $ △ODP $ waist length 5 when the isosceles triangle, are the coordinates of point P.

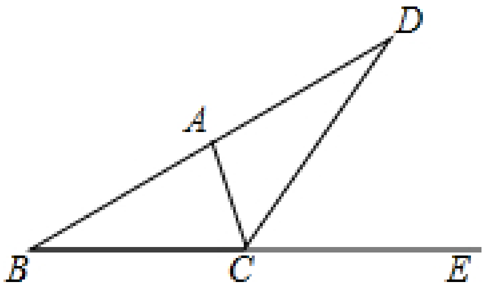


graph:
{"stem":{"pictures":[{"picturename":"1000020120_Q_1.jpg","coordinates":{"A":"10.00,0.00","B":"10.00,4.00","C":"0.00,4.00","D":"5.00,0.00","P":"2.00,4.00","O":"0.00,0.00"},"collineations":{"0":"C###A","1":"C###B###P","2":"B###A","3":"P###B","4":"P###O","5":"O###D###A","6":"P###D","7":"C###O"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP:
PointRelation:O(0,0),RectangleRelation{rectangle=Rectangle:OABC},PointRelation:A(10,0),PointRelation:C(0,4),MiddlePointOfSegmentRelation{middlePoint=Q_0,segment=AC},EqualityRelation{AC=v_1},Calcu

lation:(ExpressRelation:[key:]v_1),Coordinate:PointRelation:Q_0,MiddlePointOfSegmentRelation{middlePoint=D,segment=OA},PointOnLineRelation{point=P, line=BC, isConstant=false, extension=false},IsoscelesTriangleRelation:IsoscelesTriangle:△ODP[Optional.of(D)],Coordinate:PointRelation:P,SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]AC)},SolutionConclusionRelation{relation=Coordinate:PointRelation:Q_0},SolutionConclusionRelation{relation=Coordinate:PointRelation:P}

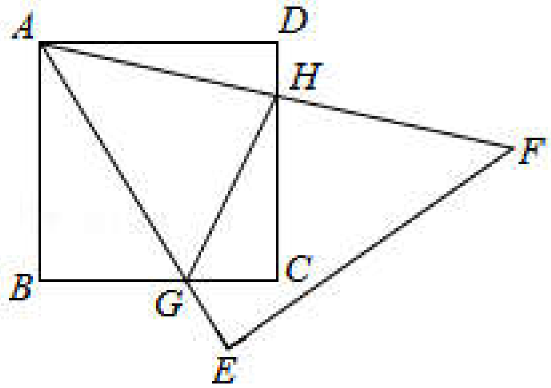
573, topic: Given: FIG, D is the intersection of △ABC exterior angle bisector of the extension line BA and CD #% # Proof: ∠ECD =90 ° + $ \ frac {1} {2} $ (∠B -∠CAD) #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000082702_Q_1.jpg","coordinates":{"A":"-3.86,1.85","B":"-5.48,0.64","C":"-3.31,0.65","D":"-1.31,3.77","E":"0.16,0.66"},"collineations":{"0":"B###A###D","1":"B###C###E","2":"D###C","3":"A###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleRelation:△ABC,LineCrossRelation [crossPoint=Optional.of(D), iLine1=CD, iLine2=BA],AngleBisectorRelation{line=CD,angle=∠ACE, angle1=∠ACD, angle2=∠DCE},ProveConclusionRelation:[Proof: EqualityRelation{∠DCE=(1/2*Pi)+(1/2)*(∠ABC-∠CAD)}]

574, topic: FIG known square ABCD and right isosceles triangle △AEF, ∠E =90 °, AE and BC at point G, AF, and CD at point H, the square area ABCD is $ 1 {{cm }} ^ {2} $, seeking △CGH perimeter. #% # <img>

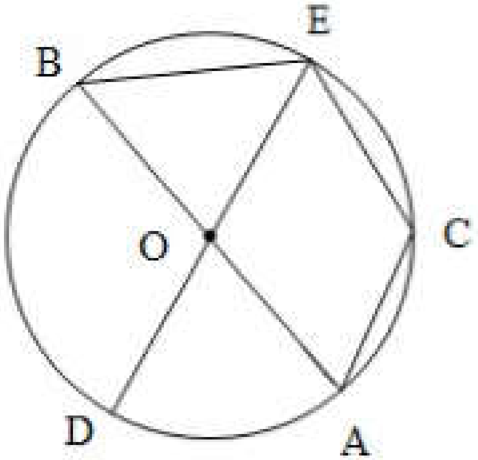


graph:
{"stem":{"pictures":[{"picturename":"1000030833_Q_1.jpg","coordinates":{"A":"-13.00,4.00","B":"-13.00,0.00","C":"-9.00,0.00","D":"-9.00,4.00","E":"-9.00,-2.00","F":"-3.00,2.00","G":"-10.33,0.00","H":"-9.00,3.20"},"collineations":{"0":"A###B","1":"B###C###G","2":"D###H###C","3":"A###D","4":"A###G###E","5":"E###F","6":"A###H###F","7":"G###H"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: EqualityRelation{C_△CGH=v_0},EqualityRelation{∠FEG=(1/2*Pi)},LineCrossRelation [crossPoint=Optional.of(G), iLine1=AE, iLine2=BC],LineCrossRelation [crossPoint=Optional.of(H), iLine1=AF,

iLine2=CD],SquareRelation{square=Square:ABCD},EqualityRelation{S_ABCD=1},Calculation:(ExpressRelation:[key:]v_0),SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]C_△CGH)}

575, topic: Given: FIG, AB, DE is the diameter of $ \odot O $, $ AC \parallel DE $, $ \odot O $ cross at points C, confirmation: $ BE =CE $.



graph:
{"stem":{"pictures":[{"picturename":"1000008149_Q_1.jpg","coordinates":{"O":"-4.95,0.93","A":"-3.45,-2.23","B":"-6.44,4.08","D":"-6.46,-2.22","C":"-1.55,1.73","E":"-3.99,3.99"},"collineations":{"0":"O###B###A","1":"O###D###E","2":"A###C","3":"E###C"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"A###B###C###D###E"}]}],"appliedproblems":{}},"substems":[]}

NLP: DiameterRelation{diameter=AB, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, length=null},DiameterRelation{diameter=DE, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, length=null},LineParallelRelation [iLine1=AC, iLine2=DE],LineCrossCircleRelation{line=AC, circle=⊙O, crossPoints=[C], crossPointNum=1},ProveConclusionRelation:[Proof: EqualityRelation{BE=CE}]

576, topic: is known, the segment $ AB =10cm $, there is little on the line AB C, and $ BC =4cm $, M is the midpoint of the line segment AC, AM segment length requirements.

graph:
{"stem":{"pictures":[{"picturename":"1000010199_Q_1.jpg","coordinates":{"A":"0.00,0.00","B":"10.00,0.00","C":"6.00,0.00","M":"3.00,0.00"},"collineations":{"0":"B###A###M###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: EqualityRelation{AM=v_0},EqualityRelation{AB=10},PointOnLineRelation{point=C, line=AB, isConstant=false, extension=false},EqualityRelation{BC=4},MiddlePointOfSegmentRelation{middlePoint=M,segment=AC},Calculation:(ExpressRelation:[key:]v_0),SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]AM)}

577, topic: 1, in the △ABC, ∠ACB =90 °, ∠BAC =60 °, the point E is an angle bisector ∠BAC point E through point for the vertical AE, through the point A as AB line segments intersect at two vertical points D, DB connection, point F is the midpoint of BD, DH⊥AC, pedal is H, connecting EF, HF. #% # (1) in FIG. 1, if the point H AC is the midpoint, $ AC =2 \sqrt {3} $, seeking AB, BD #% # length (2) in FIG. 1, Proof:. HF =EF #% # (3) in FIG. 2, connecting CF, CE, suppose: △CEF whether equilateral triangle? If yes, please prove; if not, please explain why #% # <img>#% # <img>.

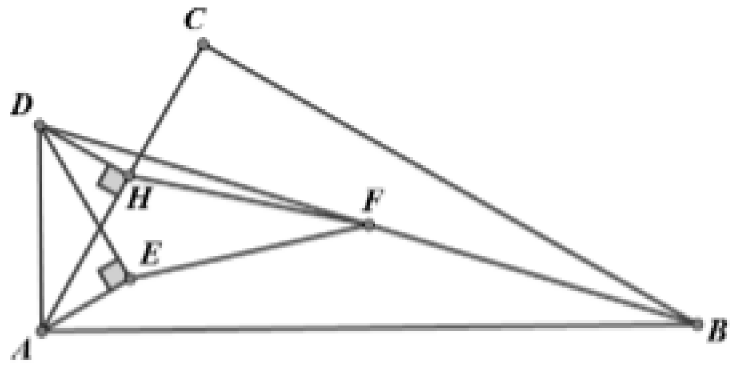
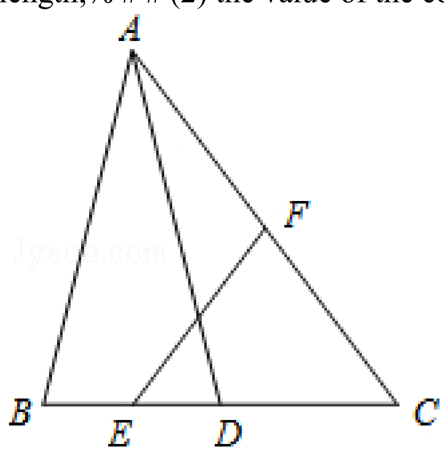


图 1

graph:
{"stem":{"pictures":[{"picturename":"1000038411_Q_1.jpg","coordinates":{"A":"-8.68,2.03","B":"0.74,1.30","C":"-6.01,5.93","D":"-7.89,5.54","E":"-6.66,2.99","F":"-3.57,3.42","H":"-6.79,4.78"},"collineations":{"0":"D###F###B","1":"A###H###C","2":"E###F","3":"A###E","4":"E###D","5":"D###H","6":"H###F","7":"B###A","8":"C###B"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[{"substemid":"2","questionrelies":"","pictures":[{"picturename":"1000038411_Q_1.jpg","coordinates":{},"collineations":{"0":"C###F","1":"E###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}}]}

NLP: AngleBisectorRelation{line=AE,angle=∠BAH, angle1=∠BAE, angle2=∠EAH},TriangleRelation:△ABC,EqualityRelation{∠BCH=(1/2*Pi)},EqualityRelation{∠BAH=(1/3*Pi)},LinePerpRelation{line1=DE, line2=AE, crossPoint=E},SegmentRelation:DB,MiddlePointOfSegmentRelation{middlePoint=F,segment=BD},LinePerpRelation{line1=DH, line2=AC, crossPoint=H},SegmentRelation:EF,SegmentRelation:HF,(ExpressRelation:[key:]1),MiddlePointOfSegmentRelation{middlePoint=H,segment=AC},EqualityRelation{AC=2*(3^(1/2))},Calculation:(ExpressRelation:[key:]AB),Calculation:(ExpressRelation:[key:]BD),(ExpressRelation:[key:]1),(ExpressRelation:[key:]2),SegmentRelation:CF,SegmentRelation:CE,SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]AB)},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]BD)},ProveConclusionRelation:[Proof: EqualityRelation{FH=EF}],ProveConclusionRelation:[RegularTriangleRelation:RegularTriangle:△CEF]

578, topic: FIG, △ABC is known, the point D is the midpoint of the side BC, points E, F are the BD, the midpoint of the AC and AB =AD, AC =10, $ \ sin C =. \ frac {4} {5} $ #% # (1) find the line segment EF of length;% # # (2) the value of the cosine of ∠B #% # <img>.

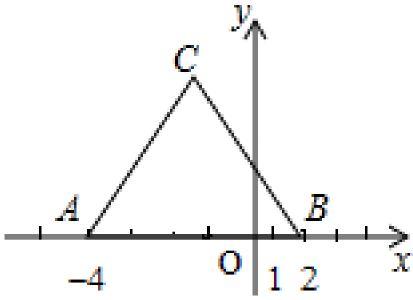


graph:

{"stem":{"pictures":[{"picturename":"1000039075_Q_1.jpg","coordinates":{"A":"0.00,8.00","B":"-2.00,0.00","C":"6.00,0.00","D":"2.00,0.00","E":"0.00,0.00","F":"3.00,4.00"},"collineations":{"0":"E###B###D###C","1":"A###F###C","2":"D###A","3":"E###F","4":"A###B"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleRelation:△ABC,MiddlePointOfSegmentRelation{middlePoint=D,segment=BC},MiddlePointOfSegmentRelation{middlePoint=E,segment=BD},MiddlePointOfSegmentRelation{middlePoint=F,segment=AC},EqualityRelation{AB=AD},EqualityRelation{AC=10},EqualityRelation{sin(∠DCF)=(4/5)},EqualityRelation{EF=v_0},Calculation:(ExpressRelation:[key:]v_0),SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]EF)}

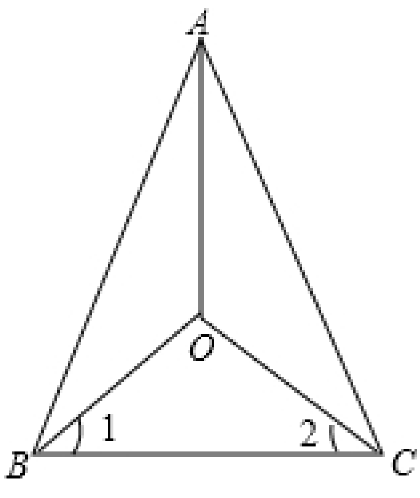
579, topic: FIG, other known coordinates of two vertices as edges of △ABC A (-4,0), B (2,0) Determine:% # # (1) of the point coordinates C; #. % # (2) △ABC area. #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000082376_Q_1.jpg","coordinates":{"A":"-4.00,0.00","B":"2.00,0.00","C":"-1.00,5.20"},"collineations":{"0":"A###C","1":"B###C","2":"B###A"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: PointRelation: B (2,0), coordinates PointRelation: C, EqualityRelation {S_ △ABC =v_0}, evaluation (size) :(ExpressRelation: [key:] v_0), SolutionConclusionRelation {relation =coordinates PointRelation: C} , SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] S_ △ABC)}

580, topic: FIG, OA equally ∠BAC, ∠1 =∠2 Proof: △ABC is an isosceles triangle #% # <img>.

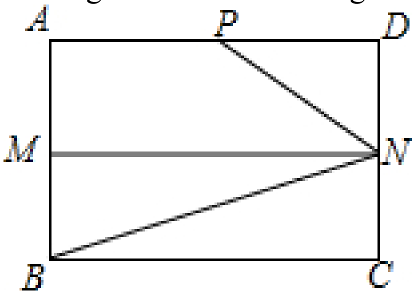


graph:
{"stem":{"pictures":[{"picturename":"1000031005_Q_1.jpg","coordinates":{"A":"-11.00,6.00","B":"-13.00,

2.00","C":"-9.00,2.00","O":"-11.00,3.00"},"collineations":{"0":"A###B","1":"A###C","2":"C###B","3":"O###A","4":"B###O","5":"O###C"},"variable-equals":{"0":"∠1=∠OBC","1":"∠2=∠OCB"},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: AngleBisectorRelation {line =OA, angle =∠BAC, angle1 =∠BAO, angle2 =∠CAO}, {} EqualityRelation ∠CBO =∠BCO, ProveConclusionRelation: [IsoscelesTriangleRelation: IsoscelesTriangle: △ABC [Optional.of (A)]]

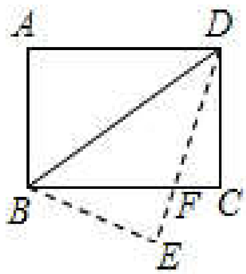
581, topic: As shown in the rectangle ABCD, AB =4, AD =6, points M, N are the midpoints AB, CD, P is a point on the AD, and ∠PNB =3∠CBN #%. # (1) Proof: ∠PNM =2∠CBN; #% # (2) required a long line segment AP #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000036624_Q_1.jpg","coordinates":{"A":"-4.21,4.58","B":"-4.21,0.58","C":"1.79,0.58","D":"1.79,4.58","M":"-4.21,2.58","N":"1.79,2.58","P":"-0.69,4.58"},"collineations":{"0":"A###M###B","1":"A###P###D","2":"M###N","3":"B###N","4":"B###C","5":"C###N###D","6":"P###N"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: RectangleRelation{rectangle=Rectangle:ABCD},EqualityRelation{AB=4},EqualityRelation{AD=6},MiddlePointOfSegmentRelation{middlePoint=M,segment=AB},MiddlePointOfSegmentRelation{middlePoint=N,segment=CD},PointOnLineRelation{point=P, line=AD, isConstant=false, extension=false},EqualityRelation{∠BNP=3*∠CBN},EqualityRelation{AP=v_0},Calculation:(ExpressRelation:[key:]v_0),ProveConclusionRelation:[Proof: EqualityRelation{∠MNP=2*∠CBN}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]AP)}

582, topic: As shown, the rectangular sheet ABCD, AB =12, BC =16 #% # (1) BD rectangular sheet is folded along the point A falls at point E (FIG ①).? , BC and DE is provided at point F., a long seek BF;. #% # (2) ② FIG rectangular sheet is folded so that point B coincident with the points D, creases of GH, GH long seek #% # <img>



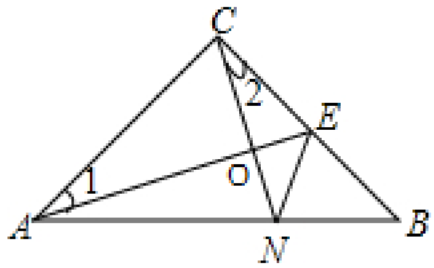
①

graph:

{"stem":{"pictures":[],"appliedproblems":{}},"substems":[{"substemid":"1","questionrelies":"","pictures":[{"picturename":"1000008798_Q_1.jpg","coordinates":{"A":"0.00,12.00","B":"0.00,0.00","C":"16.00,0.00","D":"16.00,12.00","E":"11.52,-3.36","F":"12.50,0.00"},"collineations":{"0":"A###D","1":"B###C","2":"B###D","3":"B###E","4":"C###D","5":"F###D###E","6":"A###B"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},{"substemid":"2","questionrelies":"","pictures":[{"picturename":"1000008798_Q_2.jpg","coordinates":{"A":"0.00,12.00","B":"0.00,0.00","C":"16.00,0.00","D":"16.00,12.00","F":"4.48,15.36","G":"3.50,12.00","H":"12.50,0.00"},"collineations":{"0":"A###G###D","1":"F###D","2":"C###D","3":"H###D","4":"F###G","5":"B###H###C","6":"A###B","7":"G###H"},"variable-equals":{},"circles":[]}],"appliedproblems":{}}]}

NLP:
RectangleRelation{rectangle=Rectangle:ABCD},EqualityRelation{AB=12},EqualityRelation{BC=16},EqualityRelation{BF=v_0},RectangleRelation{rectangle=Rectangle:ABCD},Calculation:(ExpressRelation:[key:]v_0),EqualityRelation{GH=v_1},RectangleRelation{rectangle=Rectangle:ABCD},SymmetricRelation{preData=B,afterData=D,symmetric=StraightLine[GH] analytic :y=k_GH*x+b_GH slope:null b:null isLinearFunction:false, pivot=},Calculation:(ExpressRelation:[key:]v_1),SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]BF)},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]GH)}

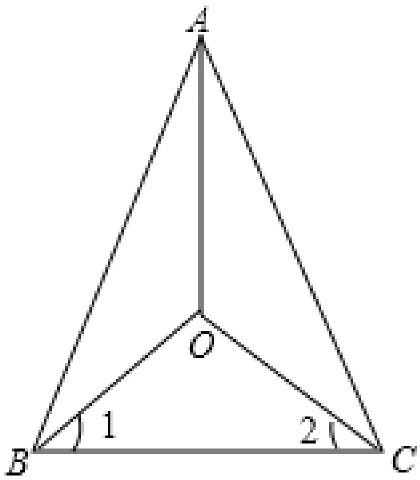
583, topic: FIG, △ABC medium, ∠CAB =∠CBA =45 °, CA =CB, point E is the midpoint of BC, CN ⊥AE, cross-AB in N, O. connected to a cross-AE EN, confirmation :. AE =CN + EN #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000035729_Q_1.jpg","coordinates":{"A":"-8.60,3.33","B":"-3.33,3.40","C":"-6.00,6.00","E":"-4.67,4.70","N":"-5.08,3.38","O":"-5.45,4.43"},"collineations":{"0":"A###N###B","1":"B###E###C","2":"C###O###N","3":"A###O###E","4":"A###C","5":"E###N"},"variable-equals":{"0":"∠1=∠CAE","1":"∠2=∠BCN"},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleRelation:△ABC,MultiEqualityRelation [multiExpressCompare=∠CAN=∠EBN=(1/4*Pi), originExpressRelationList=[], keyWord=null, result=null],EqualityRelation{AC=BC},MiddlePointOfSegmentRelation{middlePoint=E,segment=BC},LinePerpRelation{line1=CN, line2=AE, crossPoint=O},LineCrossRelation [crossPoint=Optional.of(N), iLine1=CN, iLine2=AB],LineCrossRelation [crossPoint=Optional.of(O), iLine1=CN, iLine2=AE],SegmentRelation:EN,ProveConclusionRelation:[Proof: EqualityRelation{AE=CN+EN}]

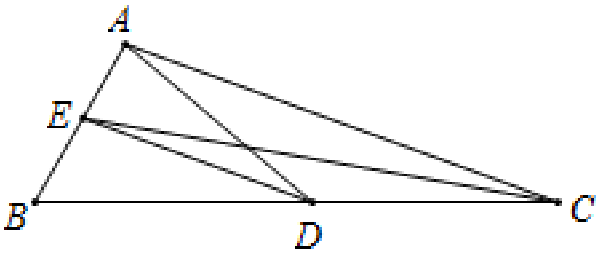
584, topic: FIG, OA equally ∠BAC, ∠1 =∠2 Proof: △ABC is an isosceles triangle #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000031005_Q_1.jpg","coordinates":{"A":"-11.00,6.00","B":"-13.00,2.00","C":"-9.00,2.00","O":"-11.00,3.00"},"collineations":{"0":"A###B","1":"A###C","2":"C###B","3":"O###A","4":"B###O","5":"O###C"},"variable-equals":{"0":"∠1=∠OBC","1":"∠2=∠OCB"},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: AngleBisectorRelation {line =OA, angle =∠BAC, angle1 =∠BAO, angle2 =∠CAO}, {} EqualityRelation ∠CBO =∠BCO, ProveConclusionRelation: [IsoscelesTriangleRelation: IsoscelesTriangle: △ABC [Optional.of (A)]]

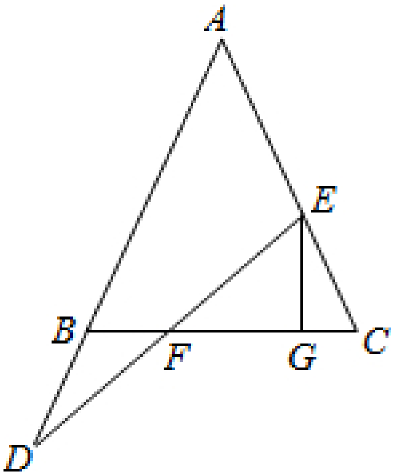
585, topic: As shown in the △ABC, ∠BAC =100 °, ∠ACB =20 °, CE is ∠ACB bisector, D is the BC point, if ∠DAC =20 °, the degree of seeking ∠CED . #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000081420_Q_1.jpg","coordinates":{"A":"-2.39,1.89","B":"-3.73,-0.40","C":"3.92,-0.45","D":"0.34,-0.43","E":"-3.02,0.82"},"collineations":{"0":"A###E###B","1":"B###D###C","2":"A###C","3":"E###C","4":"E###D","5":"A###D"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleRelation:△ABC,EqualityRelation{∠CAE=(5/9*Pi)},EqualityRelation{∠ACD=(1/9*Pi)},AngleBisectorRelation{line=CE,angle=∠ACD, angle1=∠ACE, angle2=∠DCE},PointOnLineRelation{point=D, line=BC, isConstant=false, extension=false},EqualityRelation{∠CAD=(1/9*Pi)},Calculation:AngleRelation{angle=∠CED},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]∠CED)}

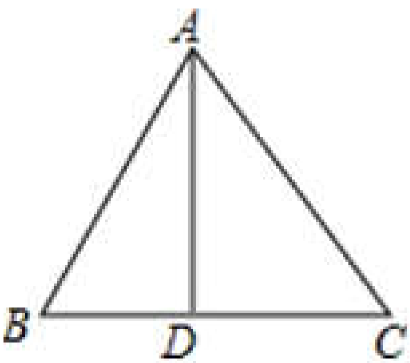
586, topic: As shown in the △ABC, AB =AC, the E line segment AC, D on the extension line of the AB, BC at even DE F., Over to point E as EG⊥BC G #% #. (1) If ∠A =50 °, ∠D =30 °, the required degree ∠GEF;% # # (2) when the BD =CE, confirmation: FG =BF + CG #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000060075_Q_1.jpg","coordinates":{"A":"2.86,6.12","B":"0.00,0.00","C":"5.72,0.00","D":"-0.98,-2.09","E":"4.80,1.95","F":"2.01,0.00","G":"4.80,0.00"},"collineations":{"0":"D###B###A","1":"A###E###C","2":"E###F###D","3":"E###G","4":"B###F###G###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleRelation:△ABC,EqualityRelation{AB=AC},PointOnLineRelation{point=E, line=AC, isConstant=false, extension=false},PointOnLineRelation{point=D, line=AB, isConstant=false, extension=true},LineCrossRelation [crossPoint=Optional.of(F), iLine1=DE, iLine2=BC],LinePerpRelation{line1=EG, line2=BC, crossPoint=G},EqualityRelation{∠BAE=(5/18*Pi)},EqualityRelation{∠BDF=(1/6*Pi)},Calculation:AngleRelation{angle=∠FEG},EqualityRelation{BD=CE},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]∠FEG)},ProveConclusionRelation:[Proof: EqualityRelation{FG=BF+CG}]

587, topic: As shown in $ \ vartriangle ABC $, D is a point on the edge of the BC, known $ AB =13 $, $ AD =12 $, $ AC =15 $, $ BD =5 $ #? % # (1) Prove:? $ \ vartriangle ABD $ is a right triangle #% # (2) CD seeking long distance and point D to the AC

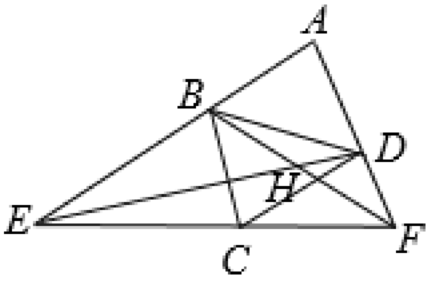


graph:
[{"variable-equals":{},"picturename":"1000001335_Q_1.jpg","collineations":{"0":"B###D###C"},"coordinates":{"D":"-1.36,1.30","A":"-1.32,5.48","B":"-3.92,1.32","C":"2.46,1.27"}}]

NLP: TriangleRelation: △ABC, PointOnLineRelation {point =D, line =BC, isConstant =false, extension =false}, EqualityRelation {AB =13}, EqualityRelation {AD =12}, EqualityRelation {AC =15}, EqualityRelation {BD =5}, EqualityRelation {CD =v_0}, evaluation (size) :(ExpressRelation: [key:] v_0), distance, seeking distance: PointToLineDistanceRelation {point =D, line =AC, distance =null}, ProveConclusionRelation: [demonstrate: RightTriangleRelation: RightTriangle: △ABD [Optional.of (D)]],

SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] CD)}, SolutionConclusionRelation {relation =distance, seeking distance: PointToLineDistanceRelation { point =D, line =AC, distance =null}}

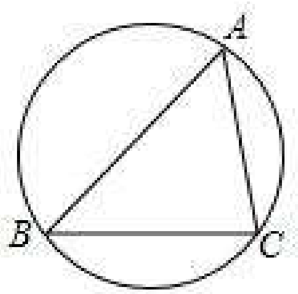
588, topic: Given: As shown, a diamond quadrangle ABCD, ∠A =60 °, the straight line EF through points C, respectively, cross-AB, AD to extension lines E, F two connecting ED, FB intersect at point H . #% # (1) if the diamond side length is 3, DF =2, find bE long; #% # (2) except △AEF outside, △BEC in the figures which a triangle similar to find out and demonstrate; #% # (3) Please explain $ {{BD} ^ 2} {} =DH reason \ cdot DE $ a. #% # <img>



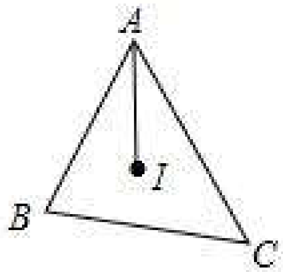
graph:
{"stem":{"pictures":[{"picturename":"1000040745_Q_1.jpg","coordinates":{"A":"3.89,1.85","B":"2.43,0.49","C":"2.88,-1.46","D":"4.34,-0.10","E":"0.23,-1.57","F":"4.65,-1.39","H":"3.48,-0.41"},"collineations":{"0":"A###B###E","1":"E###C###F","2":"F###D###A","3":"B###C","4":"C###D","5":"B###D","6":"B###H###F","7":"D###H###E"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: RhombusRelation{rhombus=Rhombus:ABCD},EqualityRelation{∠BAD=(1/3*Pi)},PointOnLineRelation{point=C, line=EF, isConstant=false, extension=false},LineCrossRelation [crossPoint=Optional.of(E), iLine1=EF, iLine2=AB],LineCrossRelation [crossPoint=Optional.of(F), iLine1=EF, iLine2=AD],LineCrossRelation [crossPoint=Optional.of(H), iLine1=ED, iLine2=FB],EqualityRelation{BE=v_0},RhombusRelation{rhombus=Rhombus:ABCD},EqualityRelation{AB=3},EqualityRelation{DF=2},Calculation:(ExpressRelation:[key:]v_0),SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]BE)},ProveConclusionRelation:[Proof: EqualityRelation{((BD)^2)=DH*DE}]

589, topic: the ABC $ $ in the acute-angled triangle, $ BC =5 $, $ \ sin A =\ frac {4} {5} $, #% # (1) in FIG ① , seeking the ABC triangle $ $ circumcircle diameter;. #% # (2) in FIG ② , triangular point $ I $ $ $ the ABC heart, $ BA =BC $, $ seek long the AI $ #% # <img>



图①



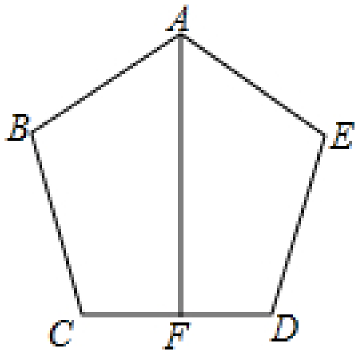
图②

graph:
{"stem":{"pictures":[],"appliedproblems":{}},"substems":[{"substemid":"1","questionrelies":"","pictures":[{"picturename":"1000008261_Q_1.jpg","coordinates":{"A":"0.62,6.22","B":"-2.50,-5.73","C":"2.50,-5.73","O":"0.00,0.00"},"collineations":{"0":"A###C","1":"B###A","2":"B###C"},"variable-equals":{},"circles":[

{"center":"O","pointincircle":"B###C###A"}]}],"appliedproblems":{}},{"substemid":"2","questionrelies":"","pictures":[{"picturename":"1000008261_Q_2.jpg","coordinates":{"A":"4.95,5.58","B":"3.00,2.00","C":"6.96,1.01","I":"4.83,2.80"},"collineations":{"0":"A###C","1":"B###A","2":"B###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}}]}

NLP: AcuteTriangleRelation:AcuteTriangle:△ABC,EqualityRelation{BC=5},EqualityRelation{sin(∠BAC)=(4/5)},InscribedShapeOfCircleRelation{closedShape=△ABC, circle=Circle[⊙O_0]{center=O_0, analytic=(x-x_O_0)^2+(y-y_O_0)^2=r_O_0^2}},圆的直径：CircleRelation{circle=Circle[⊙O_0]{center=O_0, analytic=(x-x_O_0)^2+(y-y_O_0)^2=r_O_0^2}},EqualityRelation{AI=v_1},CoreAndShapeRelation:I/△ABC/InnerCentre,EqualityRelation{AB=BC},Calculation:(ExpressRelation:[key:]v_1),SolutionConclusionRelation{relation=圆的直径：CircleRelation{circle=Circle[⊙O_0]{center=O_0, analytic=(x-x_O_0)^2+(y-y_O_0)^2=r_O_0^2}}},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]AI)}

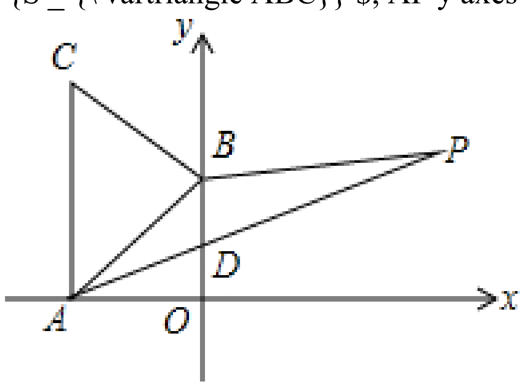
590, topic: FIG, AB =AE, BC =ED, ∠B =∠E, AF⊥CD, pedal is F, Proof: F is the midpoint of CD #% # <img>.



graph: {"stem":{"pictures":[{"picturename":"1000072669_Q_1.jpg","coordinates":{"A":"3.50,5.00","B":"1.00,3.00","C":"2.00,0.00","D":"5.00,0.00","E":"6.00,3.00","F":"3.50,0.00"},"collineations":{"0":"F###A","1":"A###B","2":"B###C","3":"C###F###D","4":"D###E","5":"E###A"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: EqualityRelation{AB=AE},EqualityRelation{BC=DE},EqualityRelation{∠ABC=∠AED},LinePerpRelation{line1=AF, line2=CD, crossPoint=F},ProveConclusionRelation:[Proof: MiddlePointOfSegmentRelation{middlePoint=F,segment=CD}]

591, topic: As shown, $ A \ left (- \ sqrt {3}, 0 \ right) $, B (0,1) are x-axis, y-axis points, △ABC is an equilateral triangle , the point P (3, a) in the first quadrant% # # (1) find the area of △ABC;. #% # (2) represents an area of △ABP containing a algebraic expression; #% # (3) if the $ 2S {_ {\ vartriangle ABP}} ={S _ {\ vartriangle ABC}} $, AP y axes cross at points D, D coordinates of points required. #% # <img>



graph:
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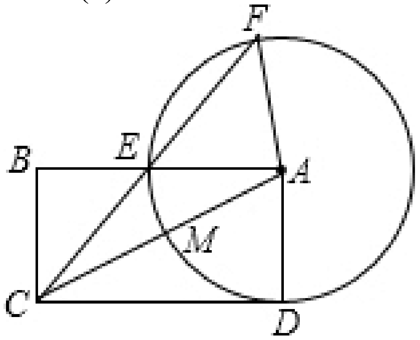
NLP: PointOnLineRelation{point=A(-(3^(1/2)),0), line=StraightLine[X] analytic :y=0 slope:0 b:0 isLinearFunction:false, isConstant=false, extension=false},PointOnLineRelation{point=B(0,1), line=StraightLine[Y] analytic :x=0 slope: b: isLinearFunction:false, isConstant=false, extension=false},RegularTriangleRelation:RegularTriangle:△ABC,PointInDomRelation [point=P(3,a), local=FIRST_QUADRANT],EqualityRelation{S_△ABC=v_0},Calculation:(ExpressRelation:[key:]v_0),EqualityRelation{S_△ABP=v_1},DualExpressRelation:DualExpressRelation{expresses=[Express:[v_1], Express:[a]]},EqualityRelation{2*S*(_*(△ABP))=S_△ABC)},LineCrossRelation [crossPoint=Optional.of(D), iLine1=AP, iLine2=StraightLine[Y] analytic :x=0 slope: b: isLinearFunction:false],Coordinate:PointRelation:D,SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]S_△ABC)},SolutionConclusionRelation{relation=DualExpressRelation:DualExpressRelation{expresses=[Express:[v_1], Express:[a]]}},SolutionConclusionRelation{relation=Coordinate:PointRelation:D}

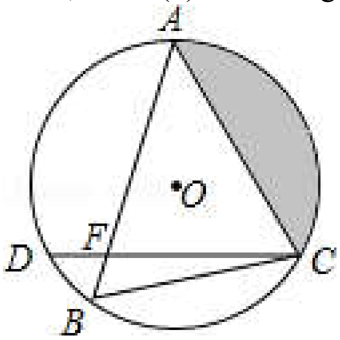
592, topic: FIG known in the rectangle ABCD, the point A as the center, and the AD circle radius for the cross side AC, AB at point M, E, CE extension lines cross $ \ $ A to point F ODOT and CM =2, AB =4 #% # (1) find $ \ $ a radius of ODOT;. #% # (2) connected to the AF, EF seeking chord length #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000060719_Q_1.jpg","coordinates":{"A":"4.00,3.00","B":"0.00,3.00","C":"0.00,0.00","D":"4.00,0.00","E":"1.00,3.00","F":"1.60,4.80","M":"1.60,1.20"},"collineations":{"0":"E###C###F","1":"C###A###M","2":"A###B###E","3":"A###F","4":"A###D","5":"C###D","6":"B###C"},"variable-equals":{},"circles":[{"center":"A","pointincircle":"E###F###M###D"}]}],"appliedproblems":{}},"substems":[]}

NLP: RadiusRelation{radius=AD, circle=Circle[⊙A]{center=A, analytic=(x-x_A)^2+(y-y_A)^2=r_A^2}, length=null},RectangleRelation{rectangle=Rectangle:ABCD},LineCrossCircleRelation{line=AC, circle=⊙O_0, crossPoints=[M], crossPointNum=1},LineCrossCircleRelation{line=AB, circle=⊙O_0, crossPoints=[E], crossPointNum=1},LineCrossCircleRelation{line=CE, circle=⊙A, crossPoints=[F], crossPointNum=1},EqualityRelation{CM=2},EqualityRelation{AB=4},圆的半径：CircleRelation{circle=Circle[⊙A]{center=A, analytic=(x-x_A)^2+(y-y_A)^2=r_A^2}},SegmentRelation:AF,Calculation:(ExpressRelation:[key:]EF),Cho rdOfCircleRelation{chord=EF, circle=Circle[⊙A]{center=A, analytic=(x-x_A)^2+(y-y_A)^2=r_A^2}, chordLength=null,straightLine=null},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]AE)},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]EF)}

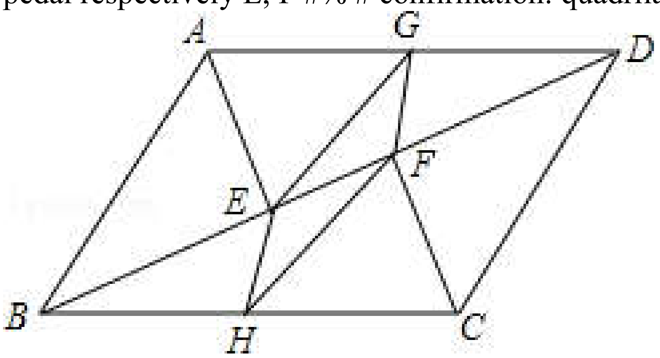
593, topic: As shown in the ⊙O, $ \ widehat {AD} =\ widehat {AC} $, chord chord AB and AC at point A, with the CD chord AB at point F., Connector BC #%. # (1) Proof: $ {{AC} ^ {2}} =AB \ cdot AF $; #% # (2) If the length of the radius ⊙O 2cm, ∠B =60 °, seeking shaded area in FIG. . #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000080880_Q_1.jpg","coordinates":{"A":"0.05,2.00","B":"-1.43,-1.40","C":"1.71,-1.04","D":"-1.72,-0.97","F":"-1.24,-0.98","O":"0.00,0.00"},"collineations":{"0":"A###C","1":"D###F###C","2":"B###C","3":"A###F###B"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: ChordOfCircleRelation{chord=AB, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, chordLength=null,straightLine=null},ChordOfCircleRelation{chord=AC, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, chordLength=null,straightLine=null},ChordOfCircleRelation{chord=CD, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, chordLength=null,straightLine=null},CircleRelation{circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}},EqualityRelation{⌒AD=⌒AC},LineCrossRelation [crossPoint=Optional.of(A), iLine1=AB, iLine2=AC],LineCrossRelation [crossPoint=Optional.of(F), iLine1=CD, iLine2=AB],SegmentRelation:BC,RadiusRelation{radius=M_0N_0, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, length=null},EqualityRelation{M_0N_0=2},EqualityRelation{∠CBF=(1/3*Pi)},ProveConclusionRelation:[Proof: EqualityRelation{((AC)^2)=AB*AF}]

594, topic: Given: As shown in the □ABCD, G, H are the AD, BC is the midpoint, AE⊥BD, CF⊥BD, pedal respectively E, F #% # confirmation: quadrilateral GEHF is a parallelogram. #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000081736_Q_1.jpg","coordinates":{"A":"-2.00,3.00","B":"-4.00,0.00","C":"1.00,0.00","D":"3.00,3.00","E":"-1.22,1.19","F":"0.22,1.81","G":"0.50,3.00","H":"-1.50,0.00"},"collineations":{"0":"A###B","1":"A###G###D","2":"B###H###C","3":"A###E","4":"C###D","5":"E###H","6":"F###C","7":"E###G","8":"F###G","9":"F###H","10":"B###E###F###D"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP:
ParallelogramRelation{parallelogram=Parallelogram:ABCD},MiddlePointOfSegmentRelation{middlePoint=G,segment=AD},MiddlePointOfSegmentRelation{middlePoint=H,segment=BC},LinePerpRelation{line1=AE, line2=BD, crossPoint=E},LinePerpRelation{line1=CF, line2=BD, crossPoint=F},ProveConclusionRelation:[Proof: ParallelogramRelation{parallelogram=Parallelogram:EGFH}]

595, topic: As shown, the $ △ABC $ contact with the circle O, $ AB =AC $, point D on the inferior arc AC, $ ∠ABD =45 ° $ #% # (1) in FIG. 1,.? AC BD cross at point E, connection AD, CD, if $ AB =BD $ request:..? $ ∠CDB $ #% # degrees (2) shown in Figure 2, the connection AD, CD if $ CD =\ sqrt. 2 $, $ AD =\ sqrt {26} $. seeking $ △ABC $ length and radius of the circumscribed circle of BC.

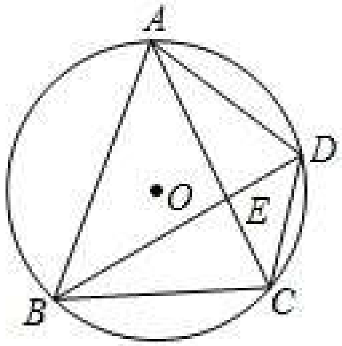


图1

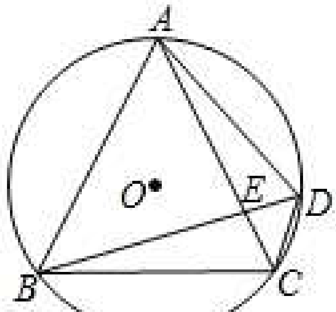


图2

graph:
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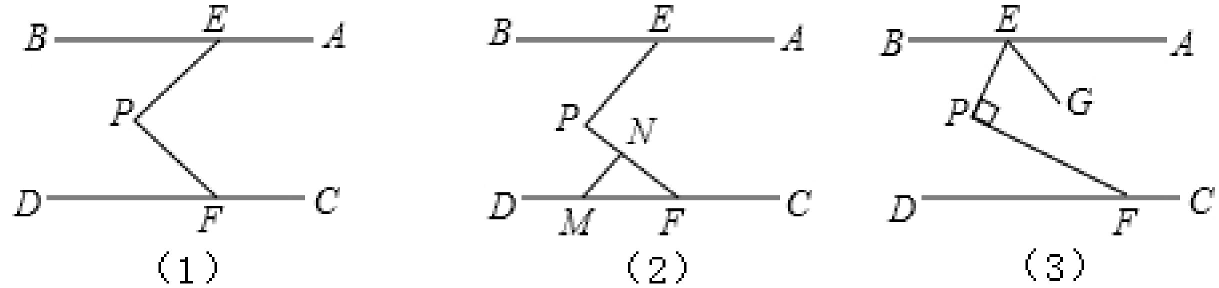
NLP: InscribedShapeOfCircleRelation{closedShape=△ABC, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}},EqualityRelation{AB=AC},PointOnArcRelation{point=D, arc=type:MINOR_ARC⌒AC},EqualityRelation{∠ABE=(1/4*Pi)},(ExpressRelation:[key:]1),LineCrossRelation [crossPoint=Optional.of(E), iLine1=BD, iLine2=AC],SegmentRelation:AD,SegmentRelation:CD,EqualityRelation{AB=BD},Calculation:AngleRelation{angle=∠BDC},RadiusRelation{radius=M_0N_0, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, length=null},InscribedShapeOfCircleRelation{closedShape=△ABC, circle=Circle[⊙O_1]{center=O_1, analytic=(x-x_O_1)^2+(y-y_O_1)^2=r_O_1^2}},EqualityRelation{BC=v_2},(ExpressRelation:[key:]2),SegmentRelation:AD,SegmentRelation:CD,EqualityRelation{CD=(2^(1/2))},EqualityRelation{AD=(26^(1/2))},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]∠BDC)}

596, topic: FIG. (1), AB // CD, P is a point, E, F are AB, fixed point on CD #% # (1) Prove:. ∠EPF = ∠BEP + ∠PFD; #% # (2) If the point M is a CD, as shown in (2), ∠FMN =∠BEP, MN and cross PF test at point N. and the relationship ∠EPF ∠PNM and prove your conclusion; #% # (3) mobile E, F so that ∠EPF =90 °, as shown in (3), as ∠PEG =∠BEP, ratioed with ∠PFD ∠AEG degrees. #% # <img>



graph:
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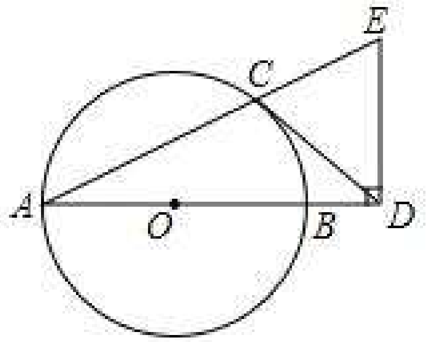
NLP: LineParallelRelation [iLine1=AB, iLine2=CD],PointRelation:P,PointOnLineRelation{point=E, line=AB, isConstant=false, extension=false},PointOnLineRelation{point=F, line=CD, isConstant=false, extension=false},PointOnLineRelation{point=M, line=CD, isConstant=false, extension=false},EqualityRelation{∠FMN=∠BEP},LineCrossRelation [crossPoint=Optional.of(N), iLine1=MN, iLine2=PF],JudgeTwoAnglesConnectRelation{ [∠EPN,∠MNP]},PointRelation:F,EqualityRelation{∠EPN=(1/2*Pi)},Calculation:(ExpressRelation:[key:](∠AEG/∠MFN)),ProveConclusionRelation:[Proof: EqualityRelation{∠EPN=∠BEP+∠MFN}],ProveConclusionRelation:[Proof: JudgeTwoAnglesConnectRelation{ [∠EPN,∠MNP]}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:](∠AEG/∠MFN))}

597, topic: FIG, AB is the diameter of $ \odot O $, CD $ \odot O $ tangent to the points C, and the extended line AB at point D, $ DE \perp AD $ post and an extension line of the AC at point E.?#%#(1) Proof: $ DC =DE $; #% # (2) when the $ \tan \angle CAB =\frac {1} {2} $, $ AB =3 $,? seeking long BD.

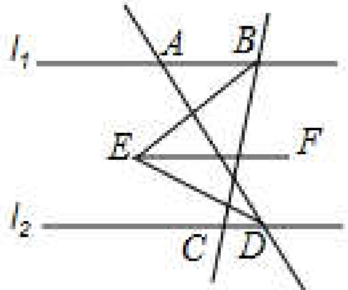


graph:
{"stem":{"pictures":[{"picturename":"1000024998.jpg","coordinates":{"A":"-3.00,0.00","B":"3.00,0.00","C":"1.80,2.40","D":"5.00,0.00","E":"5.00,4.00","O":"0.00,0.00"},"collineations":{"0":"B###O###D###A","1":"D###C","2":"E###D","3":"E###C###A"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"A###B###C"}]}],"appliedproblems":{}},"substems":[]}

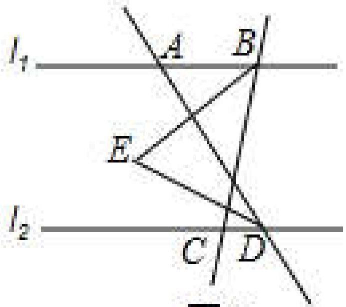
NLP: DiameterRelation{diameter=AB, circle=Circle[⊙O]{center=O,

analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, length=null},LineContactCircleRelation{line=CD, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, contactPoint=Optional.of(C), outpoint=Optional.of(D)},LineCrossRelation [crossPoint=Optional.of(D), iLine1=CD, iLine2=AB],LinePerpRelation{line1=DE, line2=AD, crossPoint=D},LineCrossRelation [crossPoint=Optional.of(E), iLine1=DE, iLine2=AC],EqualityRelation{BD=v_0},EqualityRelation{tan(∠CAO)=(1/2)},EqualityRelation{AB=3},Calculation:(ExpressRelation:[key:]v_0),ProveConclusionRelation:[Proof:
EqualityRelation{CD=DE}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]BD)}

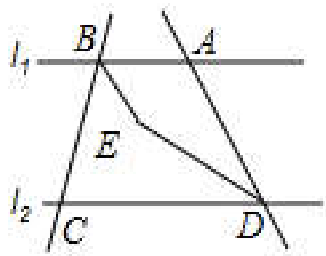
598, topic: linear known $ {{l} _ {1}} \parallel {{l} _ {2}} $, point A is $ {{l} _ {1}} $ on a fixed point, point B on $ {{l} _ {1}} $, points C, D in $ {{l} _ {2}} $ on, ∠ABC, ∠ADC bisector at point E (point B does not , D overlap). #% # (1) If the point a on the left side of the point B, ∠ABC =80 °, ∠ADC =50 °, through the point E as EF∥ $ {{l} _ {1}} $ As shown in FIG ① , seeking ∠BED degree. #% # (2) If the point a on the left side of the point B, ∠ABC =α °, ∠ADC =50 °, as shown in FIG ② , seeking ∠BED degree;. #% # (3) If the point a to the right of point B, ∠ABC =α °, ∠ADC =50 °, as shown in FIG ③ , seeking the degree ∠BED #% # <img>



图①



图②



图③

graph:
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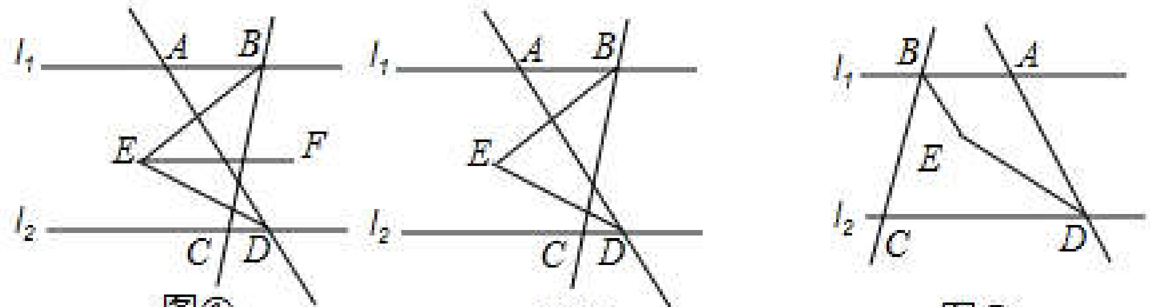
NLP: AngleBisectorRelation{line=BE,angle=∠ABC, angle1=∠ABE, angle2=∠CBE},AngleBisectorRelation{line=DE,angle=∠ADC, angle1=∠ADE, angle2=∠CDE},PointRelation:B,PointRelation:D,LineParallelRelation [iLine1=StraightLine[l_1] analytic :y=k_l_1*x+b_l_1 slope:null b:null isLinearFunction:false, iLine2=StraightLine[l_2] analytic :y=k_l_2*x+b_l_2 slope:null b:null isLinearFunction:false],PointOnLineRelation{point=A, line=StraightLine[l_1] analytic :y=k_l_1*x+b_l_1 slope:null b:null isLinearFunction:false, isConstant=false, extension=false},PointOnLineRelation{point=B, line=StraightLine[l_1] analytic :y=k_l_1*x+b_l_1 slope:null b:null isLinearFunction:false, isConstant=false, extension=false},PointOnLineRelation{point=C, line=StraightLine[l_2] analytic :y=k_l_2*x+b_l_2 slope:null b:null isLinearFunction:false, isConstant=false, extension=false},PointOnLineRelation{point=D, line=N_1M_2, isConstant=false, extension=false},PointOnLineRelation{point=E, line=N_3M_4, isConstant=false, extension=false},PositionRelation [A在B的左方],EqualityRelation{∠ABC=(4/9*Pi)},EqualityRelation{∠ADC=(5/18*Pi)},LineParallelRelation [iLine1=EF, iLine2=AB],PointOnLineRelation{point=E, line=EF, isConstant=false, extension=false},Calculation:AngleRelation{angle=∠BED},PositionRelation [A在B的左方],EqualityRelation{∠ABC=1/180*α*Pi},EqualityRelation{∠ADC=(5/18*Pi)},Calculation:AngleRelation{angle=∠BED},PositionRelation [A在B的右方],EqualityRelation{∠ABC=1/180*α*Pi},EqualityRelation{∠ADC=(5/18*Pi)},Calculation:AngleRelation{angle=∠BED},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]∠BED)},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]∠BED)},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]∠BED)}

599, topic: linear known $ {{l} _ {1}} \parallel {{l} _ {2}} $, point A is $ {{l} _ {1}} $ on a fixed point, point B on $ {{l} _ {1}} $, points C, D in $ {{l} _ {2}} $ on, ∠ABC, ∠ADC bisector at point E (point B does not , D overlap). #% # (1) If the point a on the left side of the point B, ∠ABC =80 °, ∠ADC =60 °, through the point E as EF∥ $ {{l} _ {1}} $ As shown in FIG ① , seeking ∠BED degree. #% # (2) If the point a to point B on the left side, $ ∠ABC =α ° $, ∠ADC =60 °, as shown in ② , the seek ∠BED degree (write directly result of calculation, represented by the formula containing $ $ [alpha]); #% # (3) If the point a to the right of point B, $ ∠ABC =α ° $, ∠ADC =60 °, as shown in FIG degree ③ , seeking ∠BED (represented by the formula containing $ $ [alpha]). #% # <img>



图① 图② 图③

graph:
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NLP: AngleBisectorRelation{line=BE,angle=∠ABC, angle1=∠ABE, angle2=∠CBE},AngleBisectorRelation{line=DE,angle=∠ADC, angle1=∠ADE, angle2=∠CDE},PointRelation:B,PointRelation:D,LineParallelRelation [iLine1=StraightLine[l_1] analytic :y=k_l_1*x+b_l_1 slope:null b:null isLinearFunction:false, iLine2=StraightLine[l_2] analytic :y=k_l_2*x+b_l_2 slope:null b:null isLinearFunction:false],PointOnLineRelation{point=A, line=StraightLine[l_1] analytic :y=k_l_1*x+b_l_1 slope:null b:null isLinearFunction:false, isConstant=false, extension=false},PointOnLineRelation{point=B, line=StraightLine[l_1] analytic :y=k_l_1*x+b_l_1 slope:null b:null isLinearFunction:false, isConstant=false, extension=false},PointOnLineRelation{point=C, line=StraightLine[l_2] analytic :y=k_l_2*x+b_l_2 slope:null b:null isLinearFunction:false, isConstant=false, extension=false},PointOnLineRelation{point=D, line=N_1M_2, isConstant=false, extension=false},PointOnLineRelation{point=E, line=N_3M_4, isConstant=false, extension=false},PositionRelation [A在B的左方],EqualityRelation{∠ABC=(4/9*Pi)},EqualityRelation{∠ADC=(1/3*Pi)},LineParallelRelation [iLine1=EF, iLine2=AB],PointOnLineRelation{point=E, line=EF, isConstant=false, extension=false},Calculation:AngleRelation{angle=∠BED},PositionRelation [A在B的左方],EqualityRelation{∠ABC=1/180*α*Pi},EqualityRelation{∠ADC=(1/3*Pi)},Calculation:AngleRelation{angle=∠BED},PositionRelation [A在B的右方],EqualityRelation{∠ABC=1/180*α*Pi},EqualityRelation{∠ADC=(1/3*Pi)},Calculation:AngleRelation{angle=∠BED},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]∠BED)},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]∠BED)},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]∠BED)}

600, topic: FIG known: A two point on ⊙O, B and two movable points C, D, AC and BD at point E #% # (1) in FIG. 1, confirmation $ EA \. cdot EC =EB \ cdot ED $; #% # (2) in FIG. 2, if $ \ widehat {AB} =\ widehat {BC} $, AD is the diameter ⊙O Proof: $ AD \ cdot AC =2BD \ cdot BC $; #% # (3) in FIG. 3, if AC⊥BD, from point O to 2 AD, BC long seek #% # <img>.

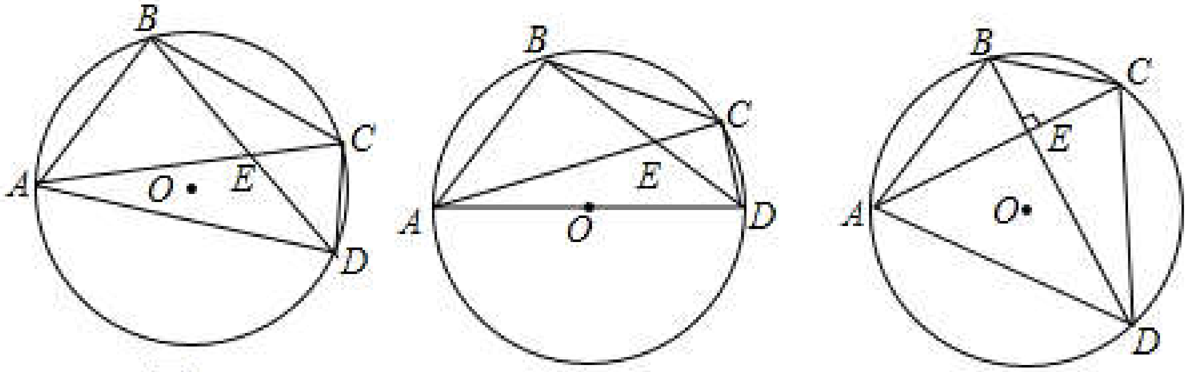

图1 图2 图3

graph:
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NLP: PointRelation:D,LineCrossRelation [crossPoint=Optional.of(E), iLine1=AC, iLine2=BD],(ExpressRelation:[key:]1),(ExpressRelation:[key:]2),EqualityRelation{⌒AB=⌒BC},DiameterRelation{diameter=AD, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, length=null},EqualityRelation{BC=v_0},(ExpressRelation:[key:]3),LinePerpRelation{line1=AC, line2=BD, crossPoint=E},PointToLineDistanceRelation{point=O, line=AD, distance=Express:[2]},Calculation:(ExpressRelation:[key:]v_0),ProveConclusionRelation:[Proof: EqualityRelation{AE*CE=BE*DE}],ProveConclusionRelation:[Proof: EqualityRelation{AD*AC=2*BD*BC}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]BC)}

601, topic: the known parallelogram ABCD, ∠A =120 °, the point P is a point on the line where the DC side, the point E is a point where the straight side BC, and PB =PE #% # (1) when the dot. when the edge P DC (FIG. 1) Proof: CE-PC =AD; #% # (2) when the point P (FIG. 2), PC, CE and AD and how extension line for DC ? Please give your relationship the number of conjecture and proved; #% # (3) when the point P CD extension line (Figure 3), PC, CE and AD how the number of relationships you have, please write? conjecture and prove. #% # <img>

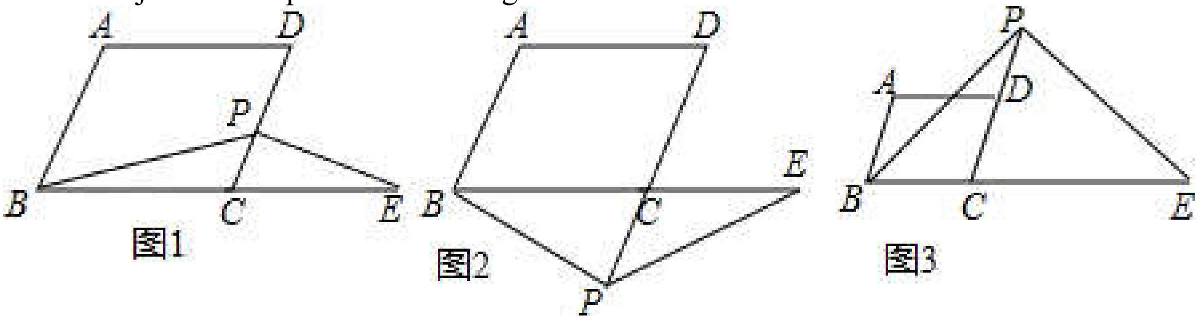
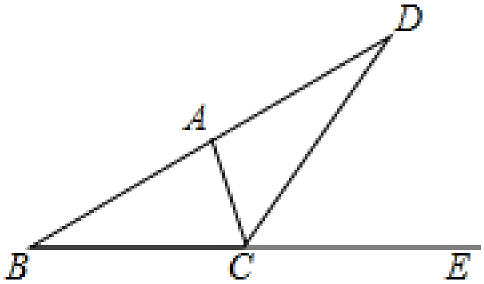


图1 图2 图3

graph:
{"stem":{"pictures":[],"appliedproblems":{}},"substems":[{"substemid":"1","questionrelies":"","pictures":[{"picturename":"1000040612_Q_1.jpg","coordinates":{"A":"1.10,1.90","B":"0.00,0.00","C":"2.90,0.00","D":"4.09,1.89","E":"6.77,0.00","P":"3.38,0.68"},"collineations":{"0":"A###B","1":"B###C###E","2":"C###P###D","3":"D###A","4":"P###B","5":"P###E"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},{"substemid":"2","questionrelies":"","pictures":[{"picturename":"1000040612_Q_1.jpg","coordinates":{"A":"1.12,-2.00","B":"0.00,-3.94","C":"2.99,-3.94","D":"4.11,-2.00","E":"4.60,-3.94","P":"2.30,-5.13"},"collineations":{"0":"A###B","1":"B###C###E","2":"P###C###D","3":"D###A","4":"P###B","5":"P###E"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},{"substemid":"3","questionrelies":"","pictures":[{"picturename":"1000040612_Q_1.jpg","coordinates":{"A":"2.07,-8.09","B":"0.95,-10.03","C":"3.68,-10.03","D":"4.79,-8.09","E":"10.08,-10.03","P":"5.52,-6.84"},"collineations":{"0":"A###B","1":"B###C###E","2":"C###D###P","3":"D###A","4":"P###B","5":"P###E"},"variable-equals":{},"circles":[]}],"appliedproblems":{}}]}

NLP: ParallelogramRelation {parallelogram =Parallelogram: ABCD}, EqualityRelation {∠BAD =(2/3 * Pi)}, PointOnLineRelation {point =P, line =DC, isConstant =false, extension =false}, PointOnLineRelation {point =E, line =BC, isConstant =false, extension =false}, EqualityRelation {BP =EP}, evaluation (size) :(ExpressRelation: [key:] (CE / AD)), evaluation (size) :(ExpressRelation: [key:] (CE / AD)), ProveConclusionRelation: [Proof: EqualityRelation {CE-CP =AD}], SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] (CE / AD))}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] (CE / AD))}

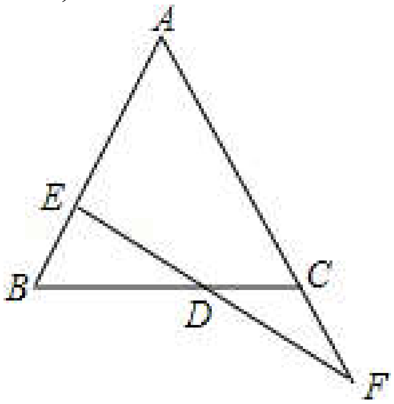
602, topic: FIG, D is the intersection of △ABC ∠ACB outer corner bisector BA extension line confirmation #% #:. ∠BAC＞∠B #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000082702_Q_1.jpg","coordinates":{"A":"-3.86,1.85","B":"-5.48,0.64","C":"-3.31,0.65","D":"-1.31,3.77","E":"0.16,0.66"},"collineations":{"0":"B###A###D","1":"B###C###E","2":"D###C","3":"A###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: ProveConclusionRelation: [Proof: InequalityRelation {∠BAC＞∠ABC}]

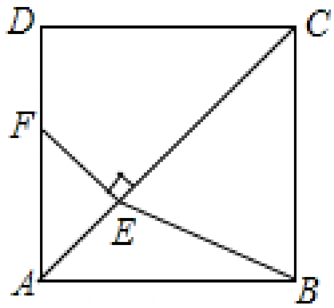
603, topic: As shown in the △ABC, AB =AC, EF AB in cross E, AC extension lines cross in F, and BE =CF, confirmation: DE =DF #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000040369_Q_1.jpg","coordinates":{"A":"-2.81,2.75","B":"-6.56,0.58","C":"-1.56,0.58","D":"-2.81,0.58"},"collineations":{"0":"A###C","1":"A###D","2":"A###B","3":"C###D###B"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleRelation:△ABC,EqualityRelation{AB=AC},EqualityRelation{BE=CF},ProveConclusionRelation:[Proof: EqualityRelation{DE=DF}]

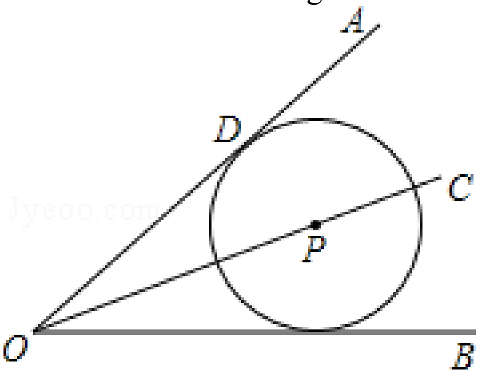
604, topic: As shown in the square ABCD, the point E is a point on a diagonal line AC, and CE =CD, cross-over point E as EF⊥AC AD at point F., Connected BE #% # (1) confirmation. :. DF =AE; #% # (2) when AB =2, seeking $ B {{E} ^ {2}} $ value #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000034725_Q_1.jpg","coordinates":{"A":"1.00,0.00","B":"5.00,0.00","C":"5.00,4.00","D":"1.00,4.00","E":"2.17,1.17","F":"1.00,2.34"},"collineations":{"0":"B###A","1":"B###C","2":"B###E","3":"C###D","4":"A###F###D","5":"A###E###C","6":"F###E"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: SquareRelation{square=Square:ABCD},PointOnLineRelation{point=E, line=AC, isConstant=false, extension=false},EqualityRelation{CE=CD},LineCrossRelation [crossPoint=Optional.of(F), iLine1=EF, iLine2=AD],LinePerpRelation{line1=EF, line2=AC, crossPoint=E},SegmentRelation:BE,EqualityRelation{AB=2},Calculation:(ExpressRelation:[key:](BE)^2), ProveConclusionRelation:[Proof: EqualityRelation{DF=AE}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:](BE)^2)}

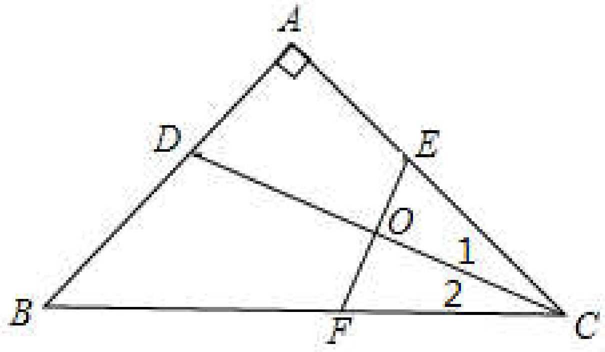
605, topic: FIG known: OC equally ∠AOB, P is an arbitrary point OC, ⊙P OA tangent to the point D. Prove:. OB and ⊙P tangent #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000040840_Q_1.jpg","coordinates":{"A":"0.60,2.60","B":"2.70,-1.61","C":"2.59,0.95","D":"-1.03,1.24","O":"-4.47,-1.61","P":"0.00,0.00"},"collineations":{"0":"A###D###O","1":"O###B","2":"O###P###C"},"variable-equals":{},"circles":[{"center":"P","pointincircle":"D"}]}],"appliedproblems":{}},"substems":[]}

NLP: AngleBisectorRelation{line=OC,angle=∠BOD, angle1=∠BOC, angle2=∠COD},PointOnLineRelation{point=P, line=OC, isConstant=false, extension=false},LineContactCircleRelation{line=OA, circle=Circle[⊙P]{center=P, analytic=(x-x_P)^2+(y-y_P)^2=r_P^2}, contactPoint=Optional.of(D), outpoint=Optional.absent()},ProveConclusionRelation:[Proof: LineContactCircleRelation{line=OB, circle=Circle[⊙P]{center=P, analytic=(x-x_P)^2+(y-y_P)^2=r_P^2}, contactPoint=Optional.absent(), outpoint=Optional.absent()}]

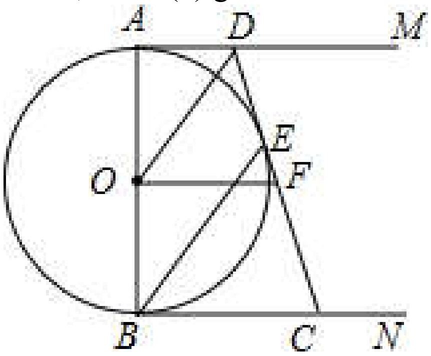
606, topic: FIG, △ABC medium, ∠A =90 °, AB =AC, D, E, F, respectively, in the AB, AC, BC, and AD =AE, CD is the perpendicular bisector EF Proof: BF =2AD. #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000030994_Q_1.jpg","coordinates":{"A":"-8.00,7.00","B":"-11.00,4.00","C":"-5.00,4.00","D":"-9.24,5.76","E":"-6.40,5.40","F":"-6.98,4.00","O":"-6.69,4.70"},"collineations":{"0":"A###D###B","1":"A###E###C","2":"D###O###C","3":"E###O###F","4":"E###O###F"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleRelation:△ABC,EqualityRelation{∠DAE=(1/2*Pi)},EqualityRelation{AB=AC},PointOnLineRelation{point=D, line=AB, isConstant=false, extension=false},PointOnLineRelation{point=E, line=AC, isConstant=false, extension=false},PointOnLineRelation{point=F, line=BC, isConstant=false, extension=false},EqualityRelation{AD=AE},MiddlePerpendicularRelation [iLine1=CD, iLine2=EF, crossPoint=Optional.of(O)],ProveConclusionRelation:[Proof: EqualityRelation{BF=2*AD}]

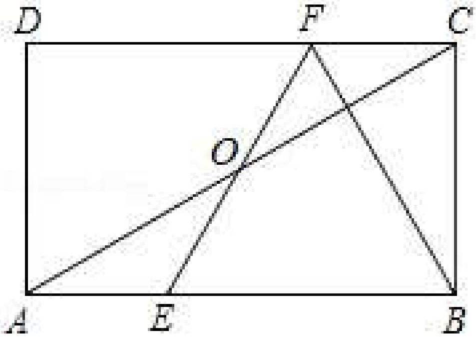
607, topic: FIG, AB is the diameter of ⊙O, AM, and its two tangents BN, DE ⊙O cut at point E, cross-AM at points D, in cross-BN point C, F is the midpoint of CD ., connection oF #% # (1) Proof: OD ∥ BE; #% # (2) guess:? What is the relationship between the number of CD and justified oF #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000081008_Q_1.jpg","coordinates":{"A":"0.00,3.00","B":"0.00,-3.00","C":"4.11,-3.00","D":"2.19,3.00","E":"2.86,0.91","O":"0.00,0.00","F":"3.15,0.00","M":"4.00,3.00","N":"6.00,-3.00"},"collineations":{"0":"A###O###B","1":"A###D###M","2":"D###E###F###C","3":"B###C###N","4":"B###E","5":"O###F","6":"O###D"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"A###B###F###E"}]}],"appliedproblems":{}},"substems":[]}

NLP: DiameterRelation{diameter=AB, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, length=null},LineContactCircleRelation{line=DE, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, contactPoint=Optional.of(E), outpoint=Optional.of(D)},LineCrossRelation [crossPoint=Optional.of(D), iLine1=DE, iLine2=AM],LineCrossRelation [crossPoint=Optional.of(C), iLine1=DE, iLine2=BN],MiddlePointOfSegmentRelation{middlePoint=F,segment=CD},SegmentRelation:OF,Calculation:(ExpressRelation:[key:](FO/CD)),ProveConclusionRelation:[Proof: LineParallelRelation [iLine1=OD, iLine2=BE]],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:](FO/CD))}

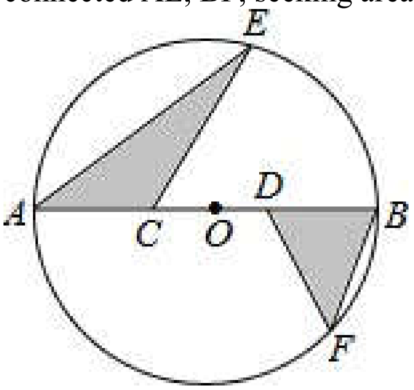
608, topic: as shown, the rectangular ABCD $ $ in, E, F are side AB, a point on the CD, $ AE =CF $, connected EF, BF, EF and diagonal line AC at point O and $ BE =BF $, $ ∠BEF =2∠BAC $ #% # (1) Prove:.? $ OE =OF $; #% # (2) when the $ BC =2 \ sqrt {3} $? , AB seeking long.



graph:
{"stem":{"pictures":[{"picturename":"1000026669_Q_1.jpg","coordinates":{"A":"0.00,0.00","B":"6.00,0.00","C":"6.00,3.46","D":"0.00,3.46","E":"2.00,0.00","F":"4.00,3.46","O":"3.00,1.73"},"collineations":{"0":"E###A###B","1":"F###D###C","2":"A###D","3":"F###B","4":"A###C###O","5":"E###F###O","6":"C###B"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: RectangleRelation{rectangle=Rectangle:ABCD},PointOnLineRelation{point=E, line=AB, isConstant=false, extension=false},PointOnLineRelation{point=F, line=CD, isConstant=false, extension=false},EqualityRelation{AE=CF},MultiPointCollinearRelation:[E, F],MultiPointCollinearRelation:[B, F],LineCrossRelation [crossPoint=Optional.of(O), iLine1=AC, iLine2=EF],EqualityRelation{BE=BF},EqualityRelation{∠BEO=2*∠EAO},EqualityRelation{AB=v_0},EqualityRelation{BC=2*(3^(1/2))},Calculation:(ExpressRelation:[key:]v_0),ProveConclusionRelation:[Proof: EqualityRelation{EO=FO}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]AB)}

609, topic: FIG radius of $ $ $ ⊙O $ 6cm, the points C, D is the diameter AB of three equal division points, points E, F, respectively, on both sides of the semicircular AB, $ ∠BCE =∠ BDF =60 ° $, connected AE, BF, seeking area two shaded in FIG. <img>

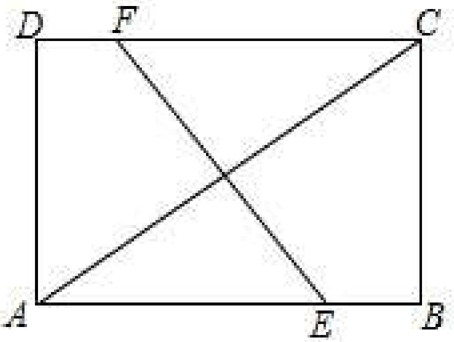


graph:
{"stem":{"pictures":[{"picturename":"BD8262E1D9FF41A39988DD39C8529946.jpg","coordinates":{"A":"-13.00,4.00","B":"-7.00,4.00","C":"-11.00,4.00","D":"-9.00,4.00","E":"-9.31,6.92","F":"-7.81,1.95","O":"-10.00,4.00"},"collineations":{"0":"B###C###O###D###A","1":"E###A","2":"C###E","3":"B###F","4":"D###F"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"A###B###E###F"}]}],"appliedproblems":{}},"substems":[]}

NLP: DiameterRelation{diameter=AB, circle=Circle[⊙O]{center=O,

analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, length=null},RadiusRelation{radius=null, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, length=Express:[6]},SegmentAliquotsPointRelation{aliquotsNum='3', points=[C, D], segment=AB},MultiEqualityRelation [multiExpressCompare=∠ECO=∠BDF=(1/3*Pi), originExpressRelationList=[], keyWord=null, result=null],SegmentRelation:AE,SegmentRelation:BF

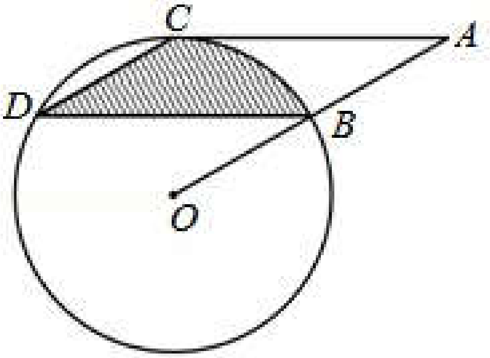
610, topic: FIG, $ quadrilateral ABCD in $ $, BE =DF, AC $ and $ EF bisect each $ $, \ angle B =90 ^ {\ circ} $ confirmation: quadrangle ABCD $ $ rectangular.



graph:
{"stem":{"pictures":[{"picturename":"1000005477_Q_1.jpg","coordinates":{"A":"-10.00,-1.46","B":"2.66,-1.46","C":"2.66,5.58","D":"-10.00,5.58","E":"-0.25,-1.46","F":"-7.09,5.58"},"collineations":{"0":"A###E###B","1":"D###F###C","2":"A###D","3":"C###B","4":"A###C","5":"E###F"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP:
Know:QuadrilateralRelation{quadrilateral=ABCD},EqualityRelation{BE=DF},LineDecileSegmentRelation [iLine1=AC, iLine2=EF, crossPoint=Optional.absent()],LineDecileSegmentRelation [iLine1=EF, iLine2=AC, crossPoint=Optional.absent()],EqualityRelation{∠CBE=(1/2*Pi)},ProveConclusionRelation:[Proof: RectangleRelation{rectangle=Rectangle:ABCD}]

611, topic: FIG point $ B, C, D $ in the $ ⊙O $, through the point C as the OB $ AC // BD $ $ $ extension lines cross at point A $, $ $ connect the CD, and $ $ ∠CDB =∠OBD =30 °, DB =\ sqrt {3} cm $ #% # $ (1) $ Prove $:.? AC $ a $ ⊙O $ tangent; # # $% (2)? $ find the area (the result of retained $ \ pi) shaded by a string $ CD, BD $ and arc $ BC $ enclosed by. $? #% #

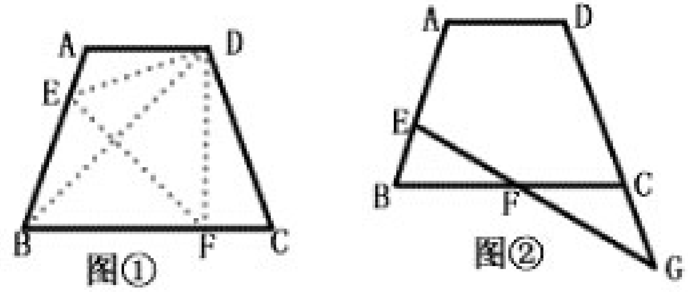


graph:
{"stem":{"pictures":[{"picturename":"1000008323_Q_1.jpg","coordinates":{"A":"10.42,6.00","B":"5.20,2.99","C":"0.00,6.00","D":"-5.20,2.99","O":"0.00,0.00"},"collineations":{"0":"O###B###A","1":"D###C","2":"O###B###A","3":"B###D","4":"C###A"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"B

###D###C"}]}],"appliedproblems":{}},"substems":[]}

NLP: PointOnCircleRelation{circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, points=[B]},PointOnCircleRelation{circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, points=[C]},PointOnCircleRelation{circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, points=[D]},PointOnLineRelation{point=C, line=AC, isConstant=false, extension=false},LineParallelRelation [iLine1=AC, iLine2=BD],LineCrossRelation [crossPoint=Optional.of(A), iLine1=AC, iLine2=OB],SegmentRelation:CD,MultiEqualityRelation [multiExpressCompare=∠BDC=∠DBO=(1/6*Pi), originExpressRelationList=[], keyWord=null, result=null],EqualityRelation{BD=(3^(1/2))},ChordOfCircleRelation{chord=CD, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, chordLength=null,straightLine=null},ProveConclusionRelation:[Proof: LineContactCircleRelation{line=AC, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, contactPoint=Optional.of(C), outpoint=Optional.of(A)}]

612, topic: as shown in the trapezoid ABCD is known AD∥BC, $ AB =DC $, E, F are the edge points AB and BC #% # (1) in FIG ① , as the EF. the folding axis of symmetry of the trapezoid ABCD, so that point B coincident with the points D, and if DF⊥BC $ AD =4 $, $ BC =8 $, find the area of the trapezoid ABCD;. #% # (2) in FIG ② , coupling EF DC and extend the extension lines intersect at point G, what is the relationship between the number if $ FG =k \ cdot EF $ (k is a positive number), try to guess BE and CG? write your conclusion and prove it. <img >



graph:
{"stem":{"pictures":[],"appliedproblems":{}},"substems":[{"substemid":"1","questionrelies":"","pictures":[{"picturename":"C7026E663875497DBE2F186B3EBC0216_1.jpg","coordinates":{"A":"-12.00,9.00","B":"-14.00,3.00","C":"-6.00,3.00","D":"-8.00,9.00","E":"-12.50,7.50","F":"-8.00,3.00"},"collineations":{"0":"B###E###A","1":"A###D","2":"B###D","3":"C###D","4":"B###F###C","5":"E###D","6":"E###F","7":"F###D"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},{"substemid":"2","questionrelies":"","pictures":[{"picturename":"C7026E663875497DBE2F186B3EBC0216_2.jpg","coordinates":{"A":"-12.00,9.00","B":"-14.00,3.00","C":"-6.00,3.00","D":"-8.00,9.00","E":"-13.36,4.91","F":"-9.00,3.00","G":"-5.49,1.46"},"collineations":{"0":"B###E###A","1":"A###D","2":"C###D###G","3":"B###F###C","4":"E###F###G"},"variable-equals":{},"circles":[]}],"appliedproblems":{}}]}

NLP: TrapezoidRelation{trapezoid=Trapezoid:ABCD, isRandomOrder:true},LineParallelRelation [iLine1=AD, iLine2=BC],EqualityRelation{AB=CD},PointOnLineRelation{point=E, line=AB, isConstant=false, extension=false},PointOnLineRelation{point=F, line=BC, isConstant=false, extension=false},TrapezoidRelation{trapezoid=Trapezoid:ABCD, isRandomOrder:true},EqualityRelation{S_ABCD=v_0},SymmetricRelation{preData=B,afterData=D,symmetric=StraightLine[EF] analytic :y=k_EF*x+b_EF slope:null b:null isLinearFunction:false, pivot=},TrapezoidRelation{trapezoid=Trapezoid:ABCD, isRandomOrder:true},LinePerpRelation{line1=DF, line2=BC,
crossPoint=F},EqualityRelation{AD=4},EqualityRelation{BC=8},Calculation:(ExpressRelation:[key:]v_0), AtomAttributeRelation{atomAttribute=AtomAttribute{atomExpr=Express:[k], numberType=POSITIVE}},LineCrossRelation [crossPoint=Optional.of(G), iLine1=EF, iLine2=DC],EqualityRelation{FG=k*EF},Calculation:(ExpressRelation:[key:](BE/CG)),SolutionConclusio

nRelation{relation=Calculation:(ExpressRelation:[key:]S_ABCD)},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:](BE/CG))}

613, topic: As shown in the △ADE and △ABC, AB =AC, AD =AE, ∠BAC + ∠EAD =180 °, △ABC does not move, △ADE rotation about the point A, connected BE, CD, F is BE midpoint connected AF #% # (1) in FIG. 1, when ∠BAE =90 °, Proof: . CD =2AF; #% # (2) when the ∠BAE ≠ 90 °, (1) the Conclusion is established? Please explain the reasons in conjunction with Figure 2. #% # <img>

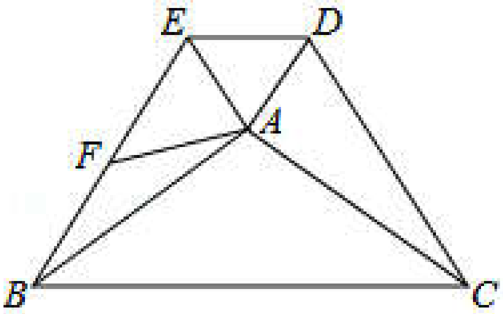


图1

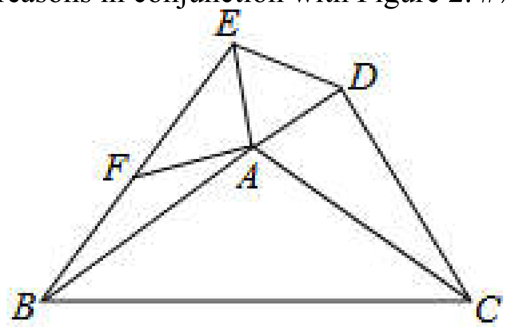


图2

graph:
{"stem":{"pictures":[],"appliedproblems":{}},"substems":[{"substemid":"1","questionrelies":"","pictures":[{"picturename":"1000031912_Q_1.jpg","coordinates":{"A":"-4.73,6.40","B":"-8.34,4.17","C":"-0.91,4.25","D":"-3.52,8.55","E":"-6.03,8.52","F":"-7.19,6.35"},"collineations":{"0":"E###D","1":"E###A","2":"E###F###B","3":"F###A","4":"B###A","5":"B###C","6":"A###C","7":"D###C","8":"D###A"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},{"substemid":"2","questionrelies":"","pictures":[{"picturename":"1000031912_Q_2.jpg","coordinates":{"A":"-2.35,5.82","B":"-5.70,3.00","C":"1.43,3.01","D":"-0.08,6.64","E":"-2.00,8.52","F":"-3.85,5.63"},"collineations":{"0":"E###D","1":"E###A","2":"E###F###B","3":"F###A","4":"B###A","5":"B###C","6":"A###C","7":"D###C","8":"D###A"},"variable-equals":{},"circles":[]}],"appliedproblems":{}}]}

NLP:
TriangleRelation:△ABC,TriangleRelation:△ADE,EqualityRelation{AB=AC},EqualityRelation{AD=AE},EqualityRelation{∠BAC+∠DAE=(Pi)},TriangleRelation:△ABC,SegmentRelation:BE,SegmentRelation:CD,MiddlePointOfSegmentRelation{middlePoint=F,segment=BE},SegmentRelation:AF,(ExpressRelation:[key:]1),EqualityRelation{∠BAE=(1/2*Pi)},ProveConclusionRelation:[Proof: EqualityRelation{CD=2*AF}]

614, topic: the known △ABC, ∠ABC =90 °, AB =3, BC =4 point Q is a fixed point on the line segment AC, AC through the point Q as the perpendicular cross line AB (FIG. 1) or an extension line segment AB (FIG. 2) at the point P #% # (1) when the point P on the line segment AB, Proof: △AQP∽△ABC; #% # (2) when △PQB is when the isosceles triangle, the AP rectification. #% # <img>

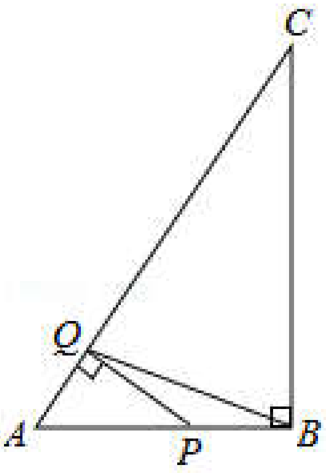


图1

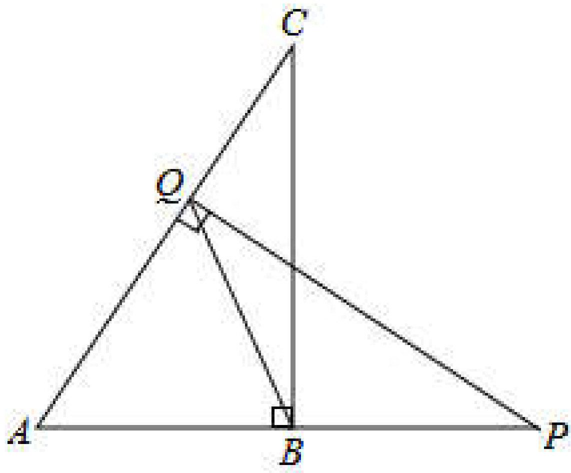
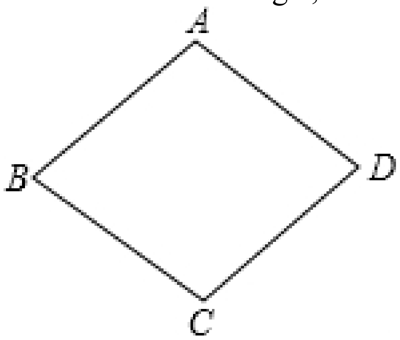


图2

graph:
{"stem":{"pictures":[],"appliedproblems":{}},"substems":[{"substemid":"1","questionrelies":"","pictures":[{"picturename":"CB05C072A6D843DABEC0846289C37120.jpg","coordinates":{"A":"-14.00,3.00","B":"-11.00,3.00","C":"-11.00,7.00","P":"-12.29,3.00","Q":"-13.38,3.82"},"collineations":{"0":"B###P###A","1":"B###C","2":"A###C###Q","3":"B###Q","4":"P###Q"},"variable-equals":{},"circles":[]}],"appliedproblems":{}}]}

NLP: LinePerpRelation{line1=PQ, line2=AC, crossPoint=Q},TriangleRelation:△ABC,EqualityRelation{∠CBP=(1/2*Pi)},EqualityRelation{AB=3},EqualityRelation{BC=4},PointOnLineRelation{point=Q, line=AC, isConstant=false, extension=false},PointOnLineRelation{point=P, line=AB, isConstant=false, extension=false},EqualityRelation{AP=v_1},IsoscelesTriangleRelation:IsoscelesTriangle:△PQB[Optional.of(P)],Calculation:(ExpressRelation:[key:]v_1),ProveConclusionRelation:[Proof: TriangleSimilarRelation{triangleA=△AQP, triangleB=△ABC}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]AP)}

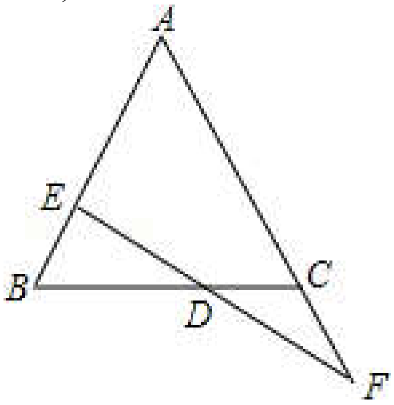
615, topic: FIG known diamond ABCD, draw a rectangle, such that A, B, C, D are four points at the four sides of a rectangle, a rhombus and the area of the rectangle ABCD is twice the area #% # <. img>



graph:
{"stem":{"pictures":[{"picturename":"1000050583_Q_1.jpg","coordinates":{"A":"-5.00,6.00","B":"-7.60,4.00","C":"-5.00,2.00","D":"-2.40,4.00"},"collineations":{"0":"A###B","1":"A###D","2":"B###C","3":"C###D"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP:
RhombusRelation{rhombus=Rhombus:ABCD},EqualityRelation{S_ABCD=v_0},RhombusRelation{rhombus=Rhombus:ABCD},PointRelation:A,PointRelation:B,PointRelation:C

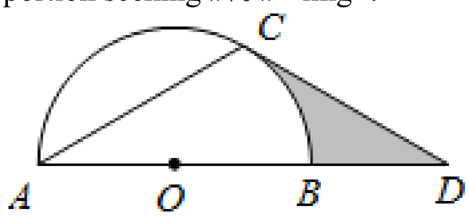
616, topic: As shown in the △ABC, AB =AC, EF AB in cross E, AC extension lines cross in F, and BE =CF, confirmation: DE =DF #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000040369_Q_1.jpg","coordinates":{"A":"-2.81,2.75","B":"-6.56,0.58","C":"-1.56,0.58","D":"-2.81,0.58"},"collineations":{"0":"A###C","1":"A###D","2":"A###B","3":"C###D###B"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP:
TriangleRelation:△ABC,EqualityRelation{AB=AC},EqualityRelation{BE=CF},ProveConclusionRelation:[Proof: EqualityRelation{DE=DF}]

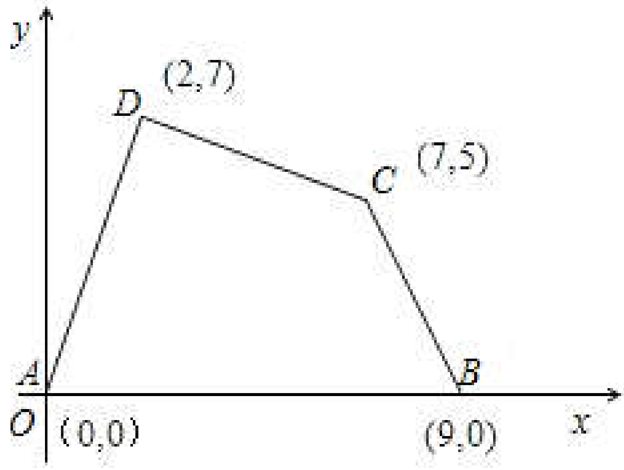
617, topic: FIG, point diameter D on the extension line of ⊙O AB, the point C on ⊙O, AC =CD, ∠ACD =120 ° #% # (1) Prove:. CD is the ⊙O tangent;% # # (2) If the radius ⊙O 2, the area of the shaded portion seeking #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000060797_Q_1.jpg","coordinates":{"A":"0.00,0.00","B":"4.00,0.00","C":"3.00,1.73","D":"6.06,0.00","O":"2.00,0.00"},"collineations":{"0":"A###O###B###D","1":"D###C","2":"C###A"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"A###C###B"}]}],"appliedproblems":{}},"substems":[]}

NLP: DiameterRelation{diameter=AB, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, length=null},PointOnLineRelation{point=D, line=AB, isConstant=false, extension=true},PointOnCircleRelation{circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, points=[C]},EqualityRelation{AC=CD},EqualityRelation{∠ACD=(2/3*Pi)},RadiusRelation{radius=null, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, length=Express:[2]},ProveConclusionRelation:[Proof: LineContactCircleRelation{line=CD, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, contactPoint=Optional.of(C), outpoint=Optional.of(D)}]

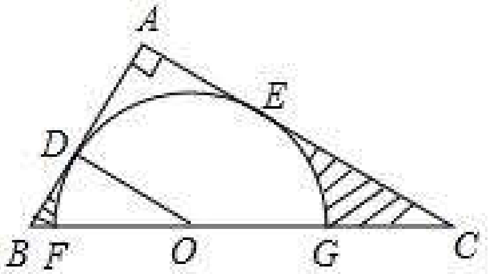
618, topic: FIG, in Cartesian coordinates, the coordinates of the quadrilateral ABCD $ $ are each vertex $ A (0,0) $, $ B (9,0) $, $ C (7,5) $, $ D (2,7) $, $ quadrangle ABCD $ seeking area.



graph:
{"stem":{"pictures":[{"picturename":"1000024452_Q_1.jpg","coordinates":{"A":"0.00,0.00","B":"9.00,0.00","C":"7.00,5.00","D":"2.00,7.00"},"collineations":{"0":"B###A","1":"C###B","2":"D###A","3":"C###D"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: known conditions QuadrilateralRelation {quadrilateral =ABCD}, EqualityRelation {S_ABCD =v_0}, CoorSysTypeRelation [name =xOy, types =Cartesian coordinate system], known conditions QuadrilateralRelation {quadrilateral =ABCD}, PointRelation: A (0,0) , PointRelation: B (9,0), PointRelation: C (7,5), PointRelation: D (2,7), evaluation (size) :(ExpressRelation: [key:] v_0), SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] S_ABCD)}

619, topic: As shown in the $ Rt △ABC $, $ ∠A =90 ° $, O BC is the edge point to the center O of the semicircular edge AB tangent to points D, and AC, BC side respectively, at point E, F, G, is connected OD, known $ BD =2 $, $ AE =3 $, $ \ tan \ angle BOD =\ frac {2} {3} $.? #% # (1) seeking $ ⊙O $ radius OD; #% # (2) Prove:?? AE is $ ⊙O $ tangent; #% # (3) find the shaded areas in FIG portion and two.

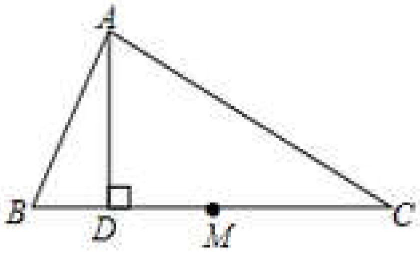


graph:
{"stem":{"pictures":[{"picturename":"1000025058.jpg","coordinates":{"A":"3.46,2.00","B":"-1.73,1.00","C":"0.00,2.00","D":"1.73,1.00","O":"0.00,0.00"},"collineations":{"0":"B###C","1":"B###D","2":"A###C","3":"A###D###O"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"C###D###B"}]}],"appliedproblems":{}},"substems":[]}

NLP: CircleCenterRelation{point=O, conic=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}},RightTriangleRelation:RightTriangle:△ABC[Optional.of(C)],EqualityRelation{∠CAD=(1/2*Pi)},PointOnLineRelation{point=O, line=BC, isConstant=false, extension=false},LineContactCircleRelation{line=AB, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, contactPoint=Optional.of(D), outpoint=Optional.absent()},SegmentRelation:AB,PointRelation:F,PointRelation:G,SegmentRelation:OD,EqualityRelation{BD=2},EqualityRelation{AE=3},EqualityRelation{tan(∠BOD)=(2/3)},ProveConclusionRelation:[Proof: LineContactCircleRelation{line=AE, circle=Circle[⊙

O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, contactPoint=Optional.absent(), outpoint=Optional.absent()}]

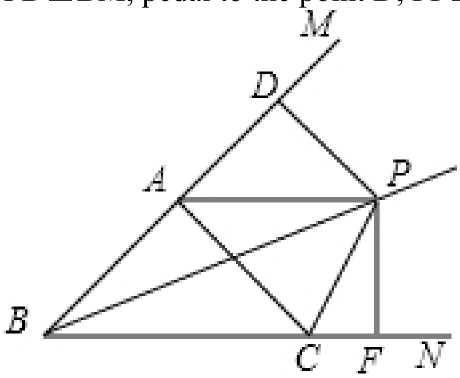
620, topic: As shown in the triangle ABC, $ \ angle B =2 \ angle C $, AD is the height of the triangle, point M is the midpoint of the side BC Proof: $ DM =\ frac {1} {2 } AB $. #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000040694_Q_1.jpg","coordinates":{"A":"-9.03,4.35","B":"-11.00,2.00","C":"-4.00,2.00","D":"-9.03,2.00","M":"-7.50,2.00"},"collineations":{"0":"A###D","1":"A###B","2":"A###C","3":"B###D###M###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleRelation:△ABC,EqualityRelation{∠ABD=2*∠ACM},MiddlePointOfSegmentRelation{middlePoint=M,segment=BC},LinePerpRelation{line1=AD, line2=BD, crossPoint=D},ProveConclusionRelation:[Proof: EqualityRelation{DM=(1/2)*AB}]

621, topic: FIG, PA, PC are ∠MAC △ABC exterior angle bisector with ∠NCA, which at point P, and PD⊥BM, pedal to the point D, PF⊥BN, pedal point F . #% # Proof: BP is ∠MBN bisector #% # <img>.

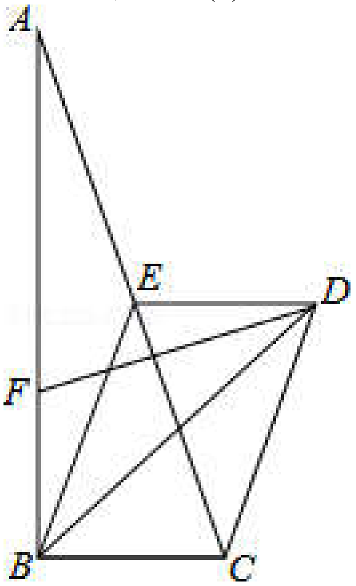


graph:
{"stem":{"pictures":[{"picturename":"1000063720_Q_1.jpg","coordinates":{"A":"3.71,1.79","B":"2.20,0.48","C":"4.87,0.48","D":"4.63,2.57","F":"5.40,0.48","P":"5.40,1.66","M":"5.21,3.07","N":"6.19,0.48"},"collineations":{"0":"A###B###D###M","1":"B###C###F###N","2":"A###C","3":"P###C","4":"A###P","5":"P###D","6":"P###F","7":"P###B"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: AngleBisectorRelation{line=PA,angle=∠CAD, angle1=∠CAP, angle2=∠DAP},AngleBisectorRelation{line=PC,angle=∠ACF, angle1=∠ACP, angle2=∠FCP},ExternalAngleOfTriangleRelation:∠CAD/△ABC,ExternalAngleOfTriangleRelation:∠ACF/△ABC,LinePerpRelation{line1=PD, line2=BM, crossPoint=D},LinePerpRelation{line1=PF, line2=BN, crossPoint=F},ProveConclusionRelation:[Proof: AngleBisectorRelation{line=BP,angle=∠ABC, angle1=∠ABP, angle2=∠CBP}]

622, topic: FIG, △ABC is a right triangle, and ∠ABC =90 °, the quadrilateral is a parallelogram BCDE, E is the midpoint of the AC, the BD bisecting ∠ABC, point F on AB, and BF =BC confirmation. : #% # (1)

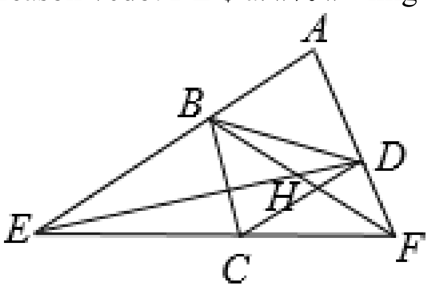
DF =AE; #% # (2) DF⊥AC #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000031848_Q_1.jpg","coordinates":{"A":"-7.00,11.00","B":"-7.00,2.00","C":"-4.00,2.00","D":"-2.50,6.50","E":"-5.50,6.50","F":"-7.00,5.00"},"collineations":{"0":"A###F###B","1":"A###E###C","2":"B###C","3":"B###E","4":"E###D","5":"D###C","6":"B###D","7":"F###D"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: RightTriangleRelation:RightTriangle:△ABC[Optional.of(B)],EqualityRelation{∠CBF=(1/2*Pi)},ParallelogramRelation{parallelogram=Parallelogram:BCDE},MiddlePointOfSegmentRelation{middlePoint=E,segment=AC},AngleBisectorRelation{line=BD,angle=∠CBF, angle1=∠CBD, angle2=∠DBF},PointOnLineRelation{point=F, line=AB, isConstant=false, extension=false},EqualityRelation{BF=BC},ProveConclusionRelation:[Proof: EqualityRelation{DF=AE}],ProveConclusionRelation:[Proof: LinePerpRelation{line1=DF, line2=AC, crossPoint=}]

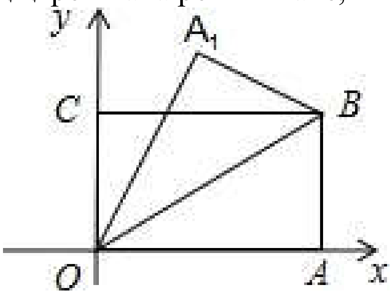
623, topic: Given: As shown, a diamond quadrangle ABCD, ∠A =60 °, the straight line EF through points C, respectively, cross-AB, AD to extension lines E, F two connecting ED, FB intersect at point H . #% # (1) if the diamond side length is 3, DF =2, find bE long; #% # (2) except △AEF outside, △BEC in the figures which a triangle similar to find out and demonstrate; #% # (3) Please explain $ {{BD} ^ 2} {} =DH reason \ cdot DE $ a. #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000040745_Q_1.jpg","coordinates":{"A":"3.89,1.85","B":"2.43,0.49","C":"2.88,-1.46","D":"4.34,-0.10","E":"0.23,-1.57","F":"4.65,-1.39","H":"3.48,-0.41"},"collineations":{"0":"A###B###E","1":"E###C###F","2":"F###D###A","3":"B###C","4":"C###D","5":"B###D","6":"B###H###F","7":"D###H###E"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: RhombusRelation{rhombus=Rhombus:ABCD},EqualityRelation{∠BAD=(1/3*Pi)},PointOnLineRelation{point=C, line=EF, isConstant=false, extension=false},LineCrossRelation [crossPoint=Optional.of(E), iLine1=EF, iLine2=AB],LineCrossRelation [crossPoint=Optional.of(F), iLine1=EF, iLine2=AD],LineCrossRelation [crossPoint=Optional.of(H), iLine1=ED, iLine2=FB],EqualityRelation{BE=v_0},RhombusRelation{rhombus=Rhombus:ABCD},EqualityRelation{AB=3},EqualityRelation{DF=2},Calculation:(ExpressRelation:[key:]v_0),SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]BE)},ProveConclusionRelation:[Proof: EqualityRelation{((BD)^2)=DH*DE}]

624, topic: FIG, in Cartesian coordinates, a rectangle the OB $ OABC $ $ $ folded along the A_1 $ $ point at a point A falls, known $ OA =\ sqrt 3 $, $ AB =1 $, find the coordinates of the point $ A_1 $.



graph:
{"stem":{"pictures":[{"picturename":"1000007569_Q_1.jpg","coordinates":{"A":"1.73,0.00","B":"1.73,1.00","C":"0.00,1.00","O":"0.00,0.00","A_1":"0.87,1.50"},"collineations":{"0":"O###A_1","1":"B###O","2":"B###C","3":"A###B","4":"A_1###B"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: CoorSysTypeRelation [name=xOy, types=直角Coordinate:系],SymmetricRelation{preData=A,afterData=A_1,symmetric=StraightLine[BO] analytic :y=k_OB*x+b_OB slope:null b:null isLinearFunction:false, pivot=},RectangleRelation{rectangle=Rectangle:OABC},EqualityRelation{AO=(3^(1/2))},EqualityRelation{AB=1},Coordinate:PointRelation:A_1,SolutionConclusionRelation{relation=Coordinate:PointRelation:A_1}

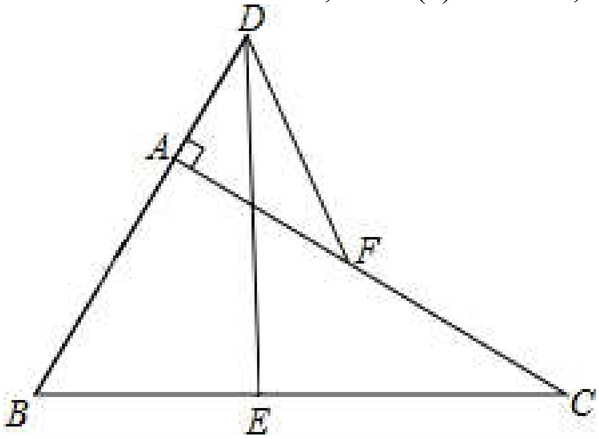
625, topic: $ \ odot O $ radius of 8cm, acute △ABC three points were $ \ on odot O $, if $ BC =8 \ sqrt {3} cm $, seeking ∠A degree.

graph:
{"stem":{"pictures":[{"picturename":"1000035146_Q_1.jpg","coordinates":{"A":"1.71,-3.61","B":"-3.46,2.00","C":"3.46,2.00","O":"0.00,0.00"},"collineations":{"0":"B###C","1":"B###A","2":"A###C","3":"O###B","4":"O###C"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"C###B###A"}]}],"appliedproblems":{}},"substems":[]}

NLP: RadiusRelation{radius=null, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, length=Express:[8]},InscribedShapeOfCircleRelation{closedShape=AcuteTriangle:△ABC, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}},EqualityRelation{BC=8*(3^(1/2))},Calculation:AngleRelation{angle=∠BAC},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]∠BAC)}

626, topic: As shown in the Rt △ABC, ∠BAC =90 °, E, F, respectively, is the midpoint of BC, AC and

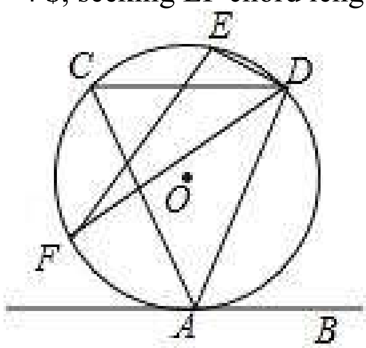
BA to extend the point D, so that $ AD ={\ frac {1} {2} } AB $ connected DE, DF #% # (1) Proof: AF and DE bisect each other;% # # (2) if BC =4, long seeking DF #% # <img>...



graph:
{"stem":{"pictures":[{"picturename":"1000041503_Q_1.jpg","coordinates":{"A":"-6.59,5.49","B":"-9.06,2.00","C":"-1.65,2.00","D":"-5.35,7.24","E":"-5.35,2.00","F":"-4.12,3.75"},"collineations":{"0":"D###A###B","1":"D###E","2":"D###F","3":"A###F###C","4":"B###E###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: RightTriangleRelation:RightTriangle:△ABC[Optional.of(A)],EqualityRelation{∠BAF=(1/2*Pi)},MiddlePointOfSegmentRelation{middlePoint=E,segment=BC},MiddlePointOfSegmentRelation{middlePoint=F,segment=AC},PointOnLineRelation{point=D, line=BA, isConstant=false, extension=true},EqualityRelation{AD=(1/2)*AB},SegmentRelation:DE,SegmentRelation:DF,EqualityRelation{DF=v_0},EqualityRelation{BC=4},Calculation:(ExpressRelation:[key:]v_0),ProveConclusionRelation:[LineDecileSegmentRelation [iLine1=AF, iLine2=DE, crossPoint=Optional.absent()]],ProveConclusionRelation:[LineDecileSegmentRelation [iLine1=DE, iLine2=AF, crossPoint=Optional.absent()]],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]DF)}

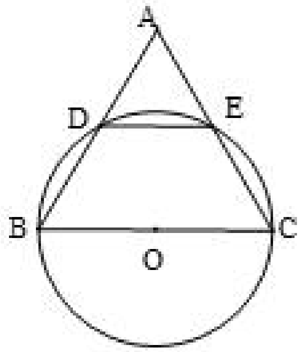
627, topic:. As shown, the straight line AB and $ ⊙O $ tangent to the point A, the string $ CD∥AB $, E, F for the two points on the circle, and if $ ∠CDE =∠ADF $ $ ⊙O radius of $ $ \ frac {5} {2} $, $ CD =4 $, seeking EF chord length.



graph:
{"stem":{"pictures":[{"picturename":"1000025002.jpg","coordinates":{"A":"0.00,-5.00","B":"7.00,-5.00","C":"-4.00,3.00","D":"4.00,3.00","E":"0.60,4.96","F":"-4.60,-1.96","O":"0.00,0.00"},"collineations":{"0":"B###A","1":"A###C","2":"A###D","3":"D###F","4":"D###E","5":"D###C","6":"E###F"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"A###D###C###E###F"}]}],"appliedproblems":{}},"substems":[]}

NLP: ChordOfCircleRelation{chord=CD, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, chordLength=null,straightLine=null},LineContactCircleRelation{line=AB, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, contactPoint=Optional.of(A), outpoint=Optional.of(B)},LineParallelRelation [iLine1=CD, iLine2=AB],PointOnCircleRelation{circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, points=[E, F]},EqualityRelation{∠CDE=∠ADF},RadiusRelation{radius=null, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, length=Express:[(5/2)]},EqualityRelation{CD=4},Calculation:(ExpressRelation:[key:]EF),ChordOfCircleRelation{chord=EF, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, chordLength=null,straightLine=null},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]EF)}

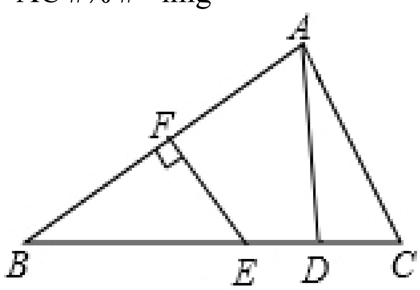
628, topic: FIG, BC $ ⊙O $ diameter side to make an equilateral $ △ABC $, AB, AC $ ⊙O $ cross at point D, E, Proof: $ BD =DE =EC $.



graph: {"stem":{"pictures":[{"picturename":"E82377BAFEB549D3991384CD21A73D29.jpg","coordinates":{"A":"-11.00,7.46","B":"-13.00,4.00","C":"-9.00,4.00","D":"-12.00,5.73","E":"-10.00,5.73","O":"-11.00,4.00"},"collineations":{"0":"B###D###A","1":"C###E###A","2":"B###O###C","3":"D###E"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"C###D###B###E"}]}],"appliedproblems":{}},"substems":[]}

NLP: DiameterRelation{diameter=BC, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, length=null},RegularTriangleRelation:RegularTriangle:△ABC,LineCrossCircleRelation{line=AB, circle=⊙O, crossPoints=[D], crossPointNum=1},LineCrossCircleRelation{line=AC, circle=⊙O, crossPoints=[E], crossPointNum=1},ProveConclusionRelation:[Proof: MultiEqualityRelation [multiExpressCompare=BD=DE=CE, originExpressRelationList=[], keyWord=null, result=null]]

629, topic: As shown in the △ABC, AB perpendicular bisector EF BC at point E, at cross points AB F, D is the midpoint of the line segment CE, ∠CAD =20 °, ∠ACB supplementary angle is . 110 ° Proof: BE =AC #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000072737_Q_1.jpg","coordinates":{"A":"-7.67,8.60","B":"-14.23,4.00","C":"-6.00,4.00","D":"-7.67,4.00","E":"-9.34,4.00","F":"-10.95,6.30"},"collineations":{"0":"A###C","1":"A###D","2":"E###F","3":"A###F###B","4":"C###D###E###B"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: MiddlePerpendicularRelation [iLine1=EF, iLine2=AB, crossPoint=Optional.of(F)],TriangleRelation:△ABC,LineCrossRelation [crossPoint=Optional.of(E), iLine1=EF, iLine2=BC],LineCrossRelation [crossPoint=Optional.of(F), iLine1=EF, iLine2=AB],MiddlePointOfSegmentRelation{middlePoint=D,segment=CE},EqualityRelation{∠CAD=(1/9*Pi)},ProveConclusionRelation:[Proof: EqualityRelation{BE=AC}]

630, topic: ABCD in the diamond, ∠ABC =60 °, E is an arbitrary point on a diagonal line AC, F is a point on an extension line segment BC, and CF =AE, connected BE, EF #% # (1). 1, when E is the midpoint of a line segment AC when, confirmation bE =EF. #% # (2) in FIG. 2, when the point E is not the midpoint of the line segment AC, and the other conditions remain unchanged, you determination (1) is established in the conclusions, and the reasons; #% # (3) shown in Figure 3, when the point E is any point to extend the line segment AC, other conditions constant, (1) if the conclusion is established? establishment, please give proof; if not established, please explain the reason #% # <img>#% # 28 thematic map.

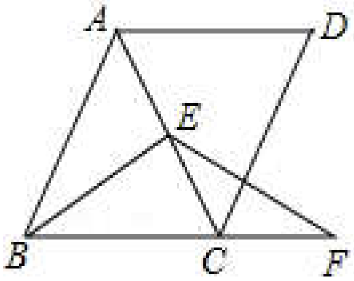


图1

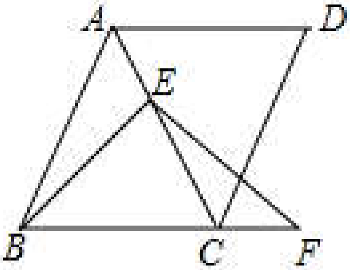


图2

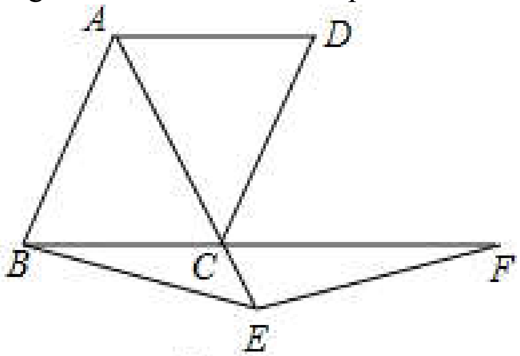
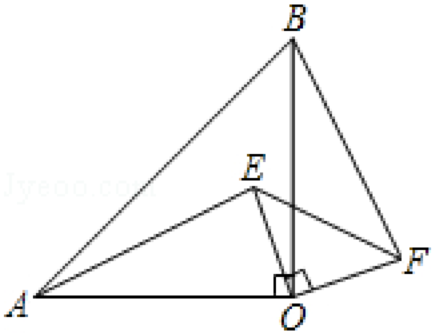


图3

graph:
{"stem":{"pictures":[],"appliedproblems":{}},"substems":[{"substemid":"1","questionrelies":"","pictures":[{"picturename":"1000041575_Q_1.jpg","coordinates":{"A":"-10.00,3.73","B":"-11.00,2.00","C":"-9.00,2.00","D":"-8.00,3.73","E":"-9.50,2.87","F":"-8.00,2.00"},"collineations":{"0":"B###C###F","1":"A###E###C","2":"C###D","3":"E###F","4":"E###B","5":"A###D","6":"A###B"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},{"substemid":"2","questionrelies":"","pictures":[{"picturename":"1000041575_Q_1.jpg","coordinates":{"A":"-8.00,7.73","B":"-9.00,6.00","C":"-7.00,6.00","D":"-6.00,7.73","E":"-7.75,7.30","F":"-6.50,6.00"},"collineations":{"0":"A###E###C","1":"B###C###F","2":"C###D","3":"A###D","4":"B###E","5":"A###B","6":"E###F"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},{"substemid":"3","questionrelies":"","pictures":[{"picturename":"1000041575_Q_1.jpg","coordinates":{"A":"-5.00,3.73","B":"-6.00,2.00","C":"-4.00,2.00","D":"-3.00,3.73","E":"-3.50,1.14","F":"-1.00,2.00"},"collineations":{"0":"A###C###E","1":"B###C###F","2":"C###D","3":"A###D","4":"B###E","5":"A###B","6":"E###F"},"variable-equals":{},"circles":[]}],"appliedproblems":{}}]}

NLP: RhombusRelation{rhombus=Rhombus:ABCD},EqualityRelation{∠ABC=(1/3*Pi)},PointOnLineRelation{point=E, line=AC, isConstant=false, extension=false},PointOnLineRelation{point=F, line=BC, isConstant=false, extension=true},EqualityRelation{CF=AE},SegmentRelation:BE,SegmentRelation:EF,(ExpressRelation:[key:]1),MiddlePointOfSegmentRelation{middlePoint=E,segment=AC},MiddlePointOfSegmentRelation{middlePoint=Q_0,segment=AC},(ExpressRelation:[key:]2),NegativeRelation{relation=PointRelation:E},(ExpressRelation:[key:]3),PointOnLineRelation{point=E, line=AC, isConstant=false, extension=false},ProveConclusionRelation:[Proof: EqualityRelation{BE=EF}]

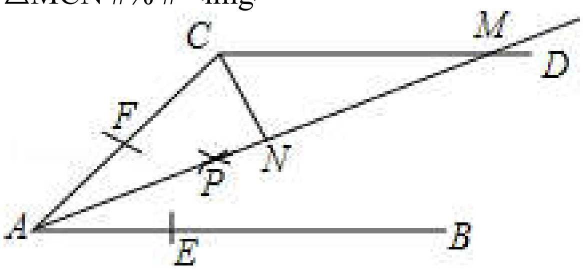
631, topic: as shown, is known, in an isosceles right △OAB, ∠AOB =90 °, △EOF in an isosceles right, ∠EOF =90 °, connected AE, BF test description: #% # (1) AE =BF; #% # (2) AE⊥BF. #% # <Img>



graph:
{"stem":{"pictures":[{"picturename":"1000033735_Q_1.jpg","coordinates":{"A":"-16.00,-21.00","B":"-13.00,-18.00","E":"-13.47,-19.72","F":"-11.72,-20.53","O":"-13.00,-21.00"},"collineations":{"0":"B###A","1":"B###O","2":"B###F","3":"A###E","4":"E###O","5":"E###F","6":"A###O","7":"O###F"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: IsoscelesRightTriangleRelation: IsoscelesRightTriangle: IsoscelesTriangle: △OAB [Optional.of (O)] [Optional.of (O)], EqualityRelation ∠AOB ={(1/2 * Pi)}, IsoscelesRightTriangleRelation: IsoscelesRightTriangle: IsoscelesTriangle: △EOF [Optional.of (O)] [Optional.of (O)], EqualityRelation ∠EOF ={(1/2 * Pi)}, SegmentRelation: AE, SegmentRelation: BF, ProveConclusionRelation: [证明: EqualityRelation {AE =BF}] , ProveConclusionRelation: [证明: LinePerpRelation AE ={line1, line2 =BF, Crosspoint =}]

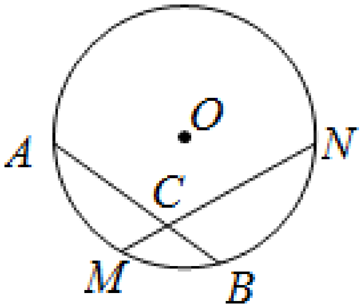
632, topic: FIG, AB∥CD, point A as the center is smaller than the radius for the arc length AC, respectively, cross-AB, AC in E, F two points, respectively, and then E, F as the center, greater than $ \ frac {1} {2} EF $ radius for the arc length, two arcs intersect at the point P, as the AP-ray, CD cross at point M. #% # (1) if ∠ACD =112 °, seeking ∠MAB degree;% # # (2) if CN⊥AM, pedal is N, Proof: . △ACN≌△MCN #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000033294_Q_1.jpg","coordinates":{"A":"0.00,0.00","B":"8.00,0.00","C":"1.62,4.00","D":"8.00,4.00","E":"1.93,0.00","F":"0.72,1.79","M":"5.93,4.00","N":"2.97,2.00","P":"2.60,1.75"},"collineations":{"0":"B###E###A","1":"A###P###N###M","2":"D###M###C","3":"C###F###A","4":"C###N"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: EqualityRelation{AC=v_0},LineParallelRelation [iLine1=AB, iLine2=CD],CircleCenterRelation{point=A, conic=Circle[⊙A]{center=A, analytic=(x-x_A)^2+(y-y_A)^2=r_A^2}},LineCrossRelation [crossPoint=Optional.of(E), iLine1=AB, iLine2=AB],LineCrossRelation [crossPoint=Optional.of(F), iLine1=AB, iLine2=AC],SegmentRelation:AP,LineCrossRelation [crossPoint=Optional.of(M), iLine1=AP, iLine2=CD],EqualityRelation{∠FCM=(28/45*Pi)},Calculation:AngleRelation{angle=∠EAP},LinePerpRelation{line1=CN, line2=AM, crossPoint=N},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]∠EAP)},ProveConclusionRelation:[Proof: TriangleCongRelation{triangleA=△ACN, triangleB=△MCN}]

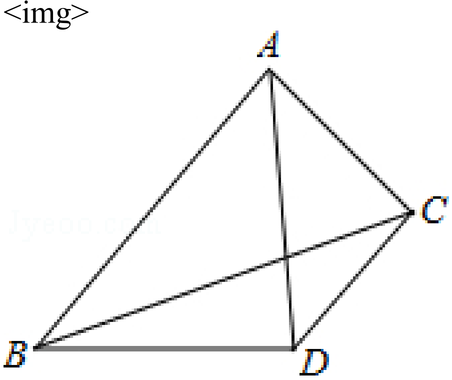
633, topic: FIG, M is $ \ widehat {AB} $ midpoint through point M to the chord AB MN cross points C, provided ⊙O radius 4cm, $ MN =4 \ sqrt {3} cm . #% # $ (1) to find the center O of the chord distance from the MN;. #% # (2) find the degree ∠ACM #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000060706_Q_1.jpg","coordinates":{"A":"-3.33,2.21","B":"3.33,2.21","C":"1.02,2.21","M":"0.00,4.00","N":"3.45,-2.02","O":"0.00,0.00"},"collineations":{"0":"B###C###A","1":"M###C###N"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"A###M###B###N"}]}],"appliedproblems":{}},"substems":[]}

NLP: PointOnCircleRelation{circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, points=[M]},ChordOfCircleRelation{chord=MN, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, chordLength=null,straightLine=null},MiddlePointOfArcRelation:M/type:MAJOR_ARC⌒AB,LineCrossRelation [crossPoint=Optional.of(C), iLine1=MN, iLine2=AB],RadiusRelation{radius=null, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, length=Express:[4]},EqualityRelation{MN=4*(3^(1/2))},CircleCenterRelation{point=O, conic=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}},距离,求距离：PointToLineDistanceRelation{point=O, line=MN, distance=null},Calculation:AngleRelation{angle=∠ACM},SolutionConclusionRelation{relation=距离,求距离：PointToLineDistanceRelation{point=O, line=MN, distance=null}},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]∠ACM)}

634, topic: FIG, △ABC medium, AB =2AC, AD equally ∠BAC, and AD =BD Proof:. DC⊥AC #% # <img>

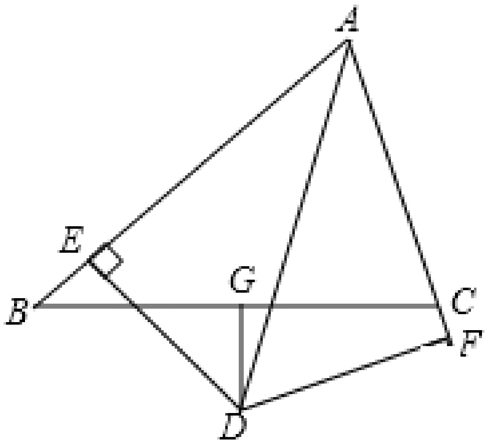


graph:
{"stem":{"pictures":[{"picturename":"1000034397_Q_1.jpg","coordinates":{"A":"-4.99,6.63","B":"-8.28,1.

93","C":"-2.22,5.89","D":"-3.28,1.93"},"collineations":{"0":"B###A","1":"A###D","2":"A###C","3":"B###C","4":"B###D","5":"D###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleRelation:△ABC,EqualityRelation{AB=2*AC},AngleBisectorRelation{line=AD,angle=∠BAC, angle1=∠BAD, angle2=∠CAD},EqualityRelation{AD=BD},ProveConclusionRelation:[Proof: LinePerpRelation{line1=DC, line2=AC, crossPoint=C}]

635, topic: As shown in △ABC is known AD equally ∠BAC, respectively, through the point D as DE ⊥AB at point E, DF⊥AC, AC extension lines cross at point F #% # (1). Proof: △AED≌ △AFD; #% # (2) through the point D to a point for DG⊥BC G, if bE =CF, BG =5cm, long seeking BC #% # <img>.

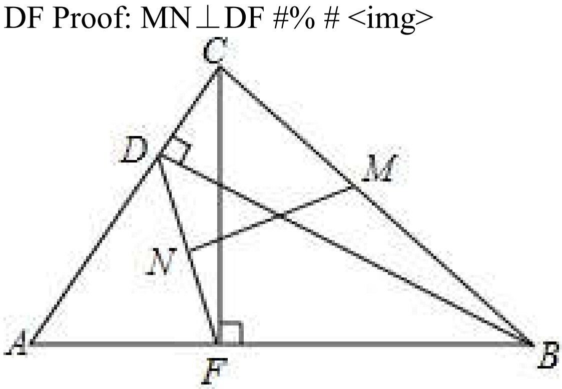


graph:

{"stem":{"pictures":[{"picturename":"1000037831_Q_1.jpg","coordinates":{"A":"-8.00,5.00","B":"-11.77,2.03","C":"-6.56,2.00","D":"-9.18,-0.12","E":"-11.22,2.46","F":"-6.22,1.30","G":"-9.17,2.01"},"collineations":{"0":"A###E###B","1":"B###G###C","2":"A###C###F","3":"E###D","4":"G###D","5":"F###D","6":"A###D"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleRelation:△ABC,AngleBisectorRelation{line=AD,angle=∠CAE, angle1=∠CAD, angle2=∠DAE},LinePerpRelation{line1=DE, line2=AB, crossPoint=E},LinePerpRelation{line1=DF, line2=AC, crossPoint=F},LineCrossRelation [crossPoint=Optional.of(F), iLine1=DF, iLine2=AC],EqualityRelation{BC=v_0},LinePerpRelation{line1=DG, line2=BC, crossPoint=G},EqualityRelation{BE=CF},EqualityRelation{BG=5},Calculation:(ExpressRelation:[key:]v_0),ProveConclusionRelation:[Proof: TriangleCongRelation{triangleA=△AED, triangleB=△AFD}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]BC)}

636, topic: As shown in the △ABC, BD, CF are high, M being the midpoint of BC, N is the midpoint of DF Proof: MN⊥DF #% # <img>

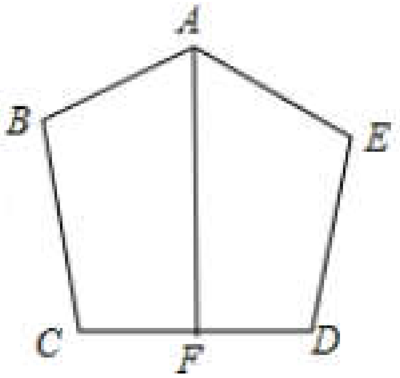


graph:

{"stem":{"pictures":[{"picturename":"1000031191_Q_1.jpg","coordinates":{"A":"-11.00,1.00","B":"-4.00,1.00","C":"-8.00,5.00","D":"-8.89,3.81","F":"-8.00,1.00","M":"-6.00,3.00","N":"-8.44,2.41"},"collineations":{"0":"A###D###C","1":"A###F###B","2":"C###M###B","3":"D###N###F","4":"M###N","5":"B###D","6":"C###F"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleRelation:△ABC,MiddlePointOfSegmentRelation{middlePoint=M,segment=BC},MiddlePointOfSegmentRelation{middlePoint=N,segment=DF},LinePerpRelation{line1=BD, line2=AD, crossPoint=D},LinePerpRelation{line1=CF, line2=AF, crossPoint=F},ProveConclusionRelation:[Proof: LinePerpRelation{line1=MN, line2=DF, crossPoint=N}]

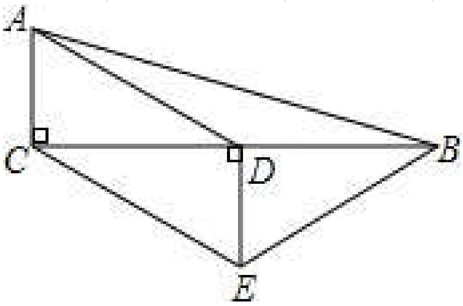
637, topic: FIG, AB =AE, BC =ED, ∠B =∠E, AF⊥CD, F is a pedal, Proof: . CF =DF #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000031205_Q_1.jpg","coordinates":{"A":"-7.00,5.00","B":"-9.00,4.00","C":"-8.23,1.48","D":"-5.77,1.48","E":"-5.00,4.00","F":"-7.00,1.48"},"collineations":{"0":"A###B","1":"A###E","2":"A###F","3":"C###F###D","4":"B###C","5":"E###D"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: EqualityRelation{AB=AE},EqualityRelation{BC=DE},EqualityRelation{∠ABC=∠AED},LinePerpRelation{line1=AF, line2=CD, crossPoint=F},ProveConclusionRelation:[Proof: EqualityRelation{CF=DF}]

638, topic: As shown in the $ △ABC $, $ ∠ACB =90 ° $, D is the midpoint of BC, $ DE⊥BC $, $ CE // AD $, if $ AC =3 $, $ CE =$ 5, then the triangle $ CEB $ What is the perimeter?

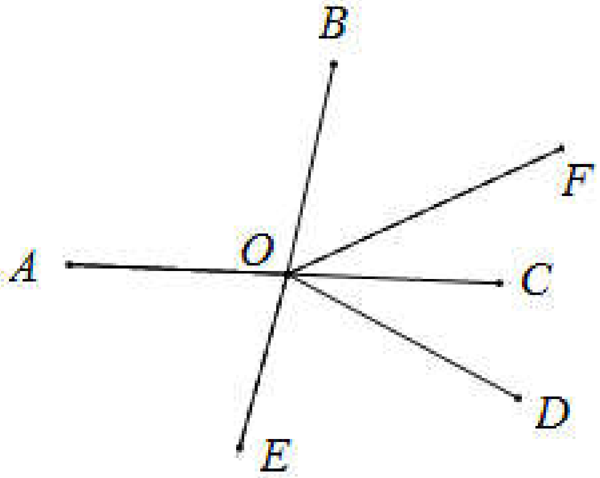


graph:
{"stem":{"pictures":[{"picturename":"1EA3C935430D4CDA956D8CDAB6F33307.jpg","coordinates":{"A":"-14.00,8.00","B":"-6.00,5.00","C":"-14.00,5.00","D":"-10.00,5.00","E":"-10.00,2.00"},"collineations":{"0":"A###D","1":"A###B","2":"A###C","3":"B###C###D","4":"B###E","5":"E###C","6":"D###E"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: EqualityRelation{C_△BCE=v_0},TriangleRelation:△ABC,EqualityRelation{∠ACD=(1/2*Pi)},MiddlePointOfSegmentRelation{middlePoint=D,segment=BC},LinePerpRelation{line1=D

E, line2=BC, crossPoint=D},LineParallelRelation [iLine1=CE, iLine2=AD],EqualityRelation{AC=3},EqualityRelation{CE=5},Calculation:(ExpressRelation:[key:]v_0),SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]C_△BCE)}

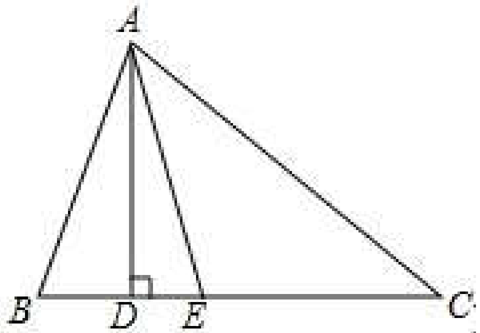
639, topic: FIG, 6 leads ray OA, OB, OC, OD, OE, OF from the point O, and $ \ angle AOB =100 ^ \ circ $, OF bisecting $ \ angle BOC $, $ \ angle AOE =\ angle DOE $, $ \ angle EOF =140 ^ \ circ $, seeking $ \ angle COD $ degrees.



graph:
{"stem":{"pictures":[{"picturename":"1000006428_Q_1.jpg","coordinates":{"A":"-12.38,-0.69","B":"-6.91,5.57","C":"-1.30,0.16","D":"-1.64,-1.80","E":"-7.51,-4.87","F":"-2.08,5.00","O":"-7.02,0.15"},"collineations":{"0":"A###O","1":"B###O","2":"C###O","3":"D###O","4":"E###O","5":"F###O"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP:
SegmentRelation:OB,SegmentRelation:OC,SegmentRelation:OD,SegmentRelation:OE,SegmentRelation:OF,EqualityRelation{∠AOB=(5/9*Pi)},AngleBisectorRelation{line=OF,angle=∠BOC, angle1=∠BOF, angle2=∠COF},EqualityRelation{∠AOE=∠DOE},EqualityRelation{∠EOF=(7/9*Pi)},Calculation:AngleRelation{angle=∠COD},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]∠COD)}

640, topic: As shown in the $ △ABC $, $ AD⊥BC $, AE bisects $ ∠BAC $,% # # complete the following problems (1) if $ ∠B =70 ° $, $ ∠C =? 34 ° $, seeking $ ∠DAE $, $ ∠AEC $ degree;? #% # (2) If the $ ∠B＞∠C $, try and guess $ ∠DAE $ $ ∠B-∠C $ What is the relationship ? prove your conjecture

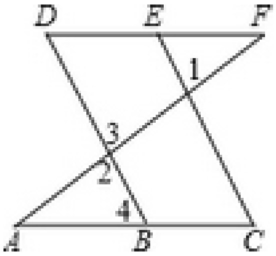


graph: {"stem":{"pictures":[{"picturename":"1000021814_Q_1.jpg

","coordinates":{"A":"-0.01,6.23","B":"-2.27,0.00","C":"9.23,0.00","D":"-0.01,0.00","E":"2.02,0.00"},"collineations":{"0":"A###B","1":"A###D","2":"A###E","3":"A###C","4":"B###D###E###C"},"variable-equals":{"0":"∠1=∠PNB","1":"∠2=∠MNP","2":"∠1=∠AMP"},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleRelation: △ABC, LinePerpRelation {line1 =AD, line2 =BC, crossPoint =D}, AngleBisectorRelation {line =AE, angle =∠BAC, angle1 =∠BAE, angle2 =∠CAE}, EqualityRelation {∠ABD =(7/18 * Pi)}, EqualityRelation {∠ACE =(17/90 * Pi)}, find the size of the angle: AngleRelation {angle =∠DAE}, aNGULAR size: AngleRelation {angle =∠AEC}, InequalityRelation { ∠ABD＞∠ACE}, the digital comparator size: DualExpressRelation {expresses =[Express: [∠ABD-∠ACE], Express: [∠DAE]]}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key :] ∠DAE)}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] ∠AEC)}, SolutionConclusionRelation {relation =digital comparator size: DualExpressRelation {expresses =[Express: [∠ABD-∠ACE], Express: [∠DAE]]}}

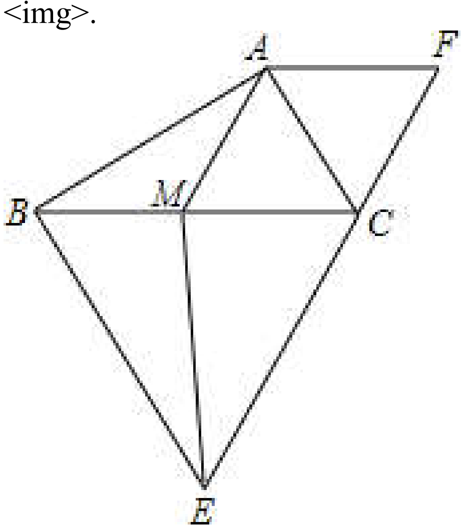
641, topic: Known: ∠1 =∠2, ∠C =∠D, please specify:. ∠A =∠F #% # <img>



graph: {"stem":{"pictures":[{"picturename":"1000050438_Q_1.jpg","coordinates":{"A":"-7.00,2.00","B":"-4.82,2.00","C":"-3.00,2.00","D":"-6.23,5.45","E":"-4.42,5.45","F":"-2.59,5.45","G":"-5.35,3.29","H":"-3.97,4.37"},"collineations":{"0":"A###B###C","1":"D###E###F","2":"D###G###B","3":"E###H###C","4":"A###G###H###F"},"variable-equals":{"0":"∠1=∠EHF","1":"∠2=∠AGB","2":"∠3=∠DGF","3":"∠4=∠DBA"},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: EqualityRelation{∠EHF=∠AGB},EqualityRelation{∠BCH=∠EDG},ProveConclusionRelation:[Proof: EqualityRelation{∠BAG=∠EFH}]

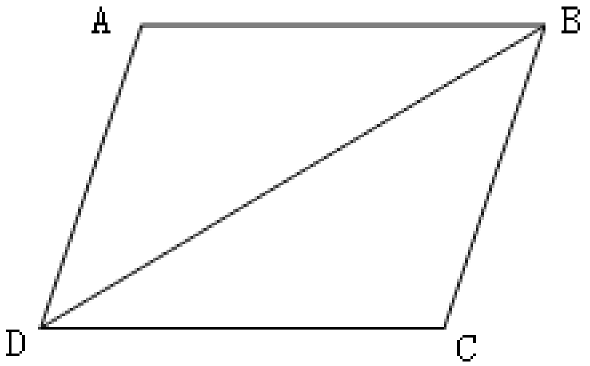
642, topic: As shown in the △ABC, ∠ACB =60 °, respectively, on both sides of the edge as △ABC and the like and outward sides △BCE △ACF, through the point A as AM∥FC BC at point M, The connection confirmation EM:% # # (1) a diamond quadrangular AMCF; #% # (2) △ACB≌△MCE #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"20BA26CAC27C4E688966CE86B52D0AA9.jpg","coordinates":{"A":"-8.73,11.00","B":"-12.00,8.00","C":"-7.00,8.00","E":"-9.50,3.67","F":"-5.27,11.00","M":"-10.46,8.00"},"collineations":{"0":"A###F","1":"A###B","2":"A###C","3":"A###M","4":"B###C###M","5":"B###E","6":"F###C###E","7":"M###E"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleRelation:△ABC,EqualityRelation{∠ACM=(1/3*Pi)},RegularTriangleRelation:RegularTriangle:△BCE,RegularTriangleRelation:RegularTriangle:△ACF,PointOnLineRelation{point=A, line=AM, isConstant=false, extension=false},LineParallelRelation [iLine1=AM, iLine2=FC],LineCrossRelation [crossPoint=Optional.of(M), iLine1=AM, iLine2=BC],SegmentRelation:EM,ProveConclusionRelation:[Proof: RhombusRelation{rhombus=Rhombus:AMCF}],ProveConclusionRelation:[Proof: TriangleCongRelation{triangleA=△ACB, triangleB=△MCE}]

643, topic: Given: FIG, AD =BC, AD // BC Proof:. ∠A =∠C #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000072626_Q_1.jpg","coordinates":{"A":"1.00,3.00","B":"6.00,3.00","C":"5.00,0.00","D":"0.00,0.00"},"collineations":{"0":"A###B","1":"A###D","2":"B###C","3":"C###D","4":"B###D"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

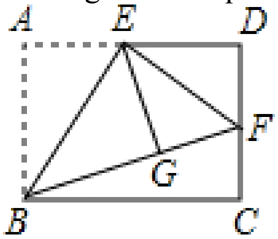
NLP: EqualityRelation{AD=BC},LineParallelRelation [iLine1=AD, iLine2=BC],ProveConclusionRelation:[Proof: EqualityRelation{∠BAD=∠BCD}]

644, topic: As shown in the △ABC, the AD is a center line, through points B, C, respectively, for the perpendicular BE AD, CF, respectively pedal points E, F Proof: .. BE =CF #% # <img>

graph:
{"stem":{"pictures":[{"picturename":"AA97BECB8DF34E5DAD1EBC227A57F7D3.jpg","coordinates":{"A":"-9.00,8.00","B":"-14.00,3.00","C":"-7.00,3.00","D":"-10.50,3.00","E":"-10.21,3.96","F":"-10.79,2.04"},"collineations":{"0":"B###A","1":"A###D###E###F","2":"A###C","3":"B###C###D","4":"B###F","5":"E###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleRelation:△ABC,LinePerpRelation{line1=AD, line2=BE, crossPoint=E},LinePerpRelation{line1=AD, line2=CF, crossPoint=F},PointOnLineRelation{point=B, line=BE, isConstant=false, extension=false},PointOnLineRelation{point=C, line=CF, isConstant=false, extension=false},MidianLineOfTriangleRelation{midianLine=AD, triangle=△ABC, top=A, bottom=BC},ProveConclusionRelation:[Proof: EqualityRelation{BE=CF}]

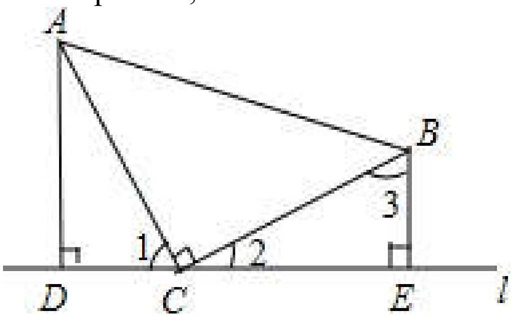
645, topic: As shown in the rectangle ABCD, the point E is the midpoint of AD, will be obtained after linear △GBE △ABE folded along BE, BG extended cross-CD at point F. If AB =6, $ BC =4 \ {6} $ length, seeking the FD sqrt. #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"210CE1D84BC34ABE82F727D408936C05.jpg","coordinates":{"A":"-14.00,9.00","B":"-14.00,3.00","C":"-4.20,3.00","D":"-4.20,9.00","E":"-9.10,9.00","F":"-4.20,5.00","G":"-8.12,4.20"},"collineations":{"0":"A###D###E","1":"A###B","2":"B###C","3":"E###B","4":"B###G###F","5":"C###D###F","6":"F###E","7":"F###G","8":"E###G"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP:
EqualityRelation{DF=v_0},RectangleRelation{rectangle=Rectangle:ABCD},MiddlePointOfSegmentRelation{middlePoint=E,segment=AD},TurnoverRelation{start=A, segment=BE,target=G},LineCrossRelation [crossPoint=Optional.of(F), iLine1=BG, iLine2=CD],EqualityRelation{AB=6},EqualityRelation{BC=4*(6^(1/2))},Calculation:(ExpressRelation:[key:]v_0),SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]DF)}

646, topic: As shown in the △ABC, ∠ACB =90 °, CA =BC, the straight line L $ $ outside △ABC and through point C, $ AD \ bot l $, $ BE \ bot l $, pedal respectively point D, E #% # (1) test Description:.. △ACD≌ △CBE #% # (2) If the line through the points C $ $ L and passing through the interior of △ABC, ceteris paribus, whether the conclusion is still valid? and explain the reasons. #% # <img>

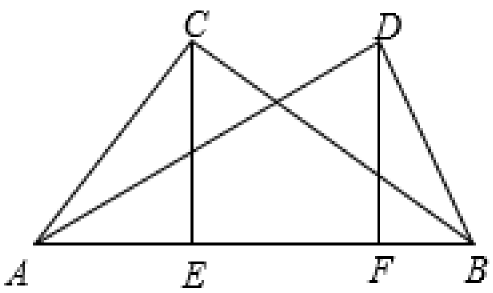


graph:
{"stem":{"pictures":[{"picturename":"1000029216_Q_1.jpg","coordinates":{"A":"3.00,4.00","B":"8.00,3.00","C":"5.00,1.00","D":"3.00,1.00","E":"8.00,1.00"},"collineations":{"0":"B###A","1":"A###D","2":"B###E","3":"A###C","4":"D###C###E","5":"B###C"},"variable-equals":{"0":"∠1=∠ACD","1":"∠2=∠BCE","2":"∠3=∠CBE"},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleRelation:△ABC,EqualityRelation{∠ACB=(1/2*Pi)}, EqualityRelation{AC=BC},LinePerpRelation{line1=CD, line2=AD, crossPoint=D},LinePerpRelation{line1=DE, line2=BE, crossPoint=E},

ProveConclusionRelation:[Proof: TriangleCongRelation{triangleA=△ACD, triangleB=△CBE}]

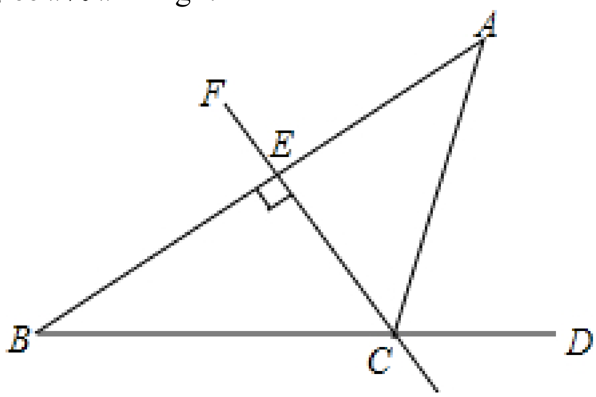
647, topic: FIG: AC⊥BC, AD⊥BD, AD =BC, CE⊥AB, DF⊥AB, pedal are E, F, Proof: AE =BF #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000042047_Q_1.jpg","coordinates":{"A":"-13.00,2.00","B":"-7.00,2.00","C":"-11.00,5.00","D":"-9.00,5.00","E":"-11.00,2.00","F":"-9.00,2.00"},"collineations":{"0":"A###E###F###B","1":"A###C","2":"A###D","3":"C###E","4":"B###C","5":"B###D","6":"D###F"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: LinePerpRelation{line1=AC, line2=BC, crossPoint=C},LinePerpRelation{line1=AD, line2=BD, crossPoint=D},EqualityRelation{AD=BC},LinePerpRelation{line1=CE, line2=AB, crossPoint=E},LinePerpRelation{line1=DF, line2=AB, crossPoint=F},ProveConclusionRelation:[Proof: EqualityRelation{AE=BF}]

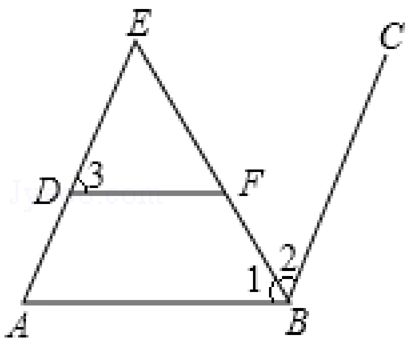
648, topic: Given: FIG, CF⊥AB in E, and AE =EB, known ∠B =40 °, seeking ∠ACD, ∠DCF degree #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"225F044385A74E629A15922D501E3596.jpg","coordinates":{"A":"-8.02,9.02","B":"-14.00,4.00","C":"-8.90,4.00","D":"-6.00,4.00","E":"-11.01,6.51","F":"-11.59,7.20"},"collineations":{"0":"A###B###E","1":"A###C","2":"B###C###D","3":"C###E###F"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: LinePerpRelation {line1 =CF, line2 =AB, crossPoint =E}, EqualityRelation {AE =BE}, EqualityRelation {∠CBE =(2/9 * Pi)}, find the size of the angle: AngleRelation {angle =∠ACD} , find the size of the angle: AngleRelation {angle =∠DCE}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] ∠ACD)}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] ∠DCE)}

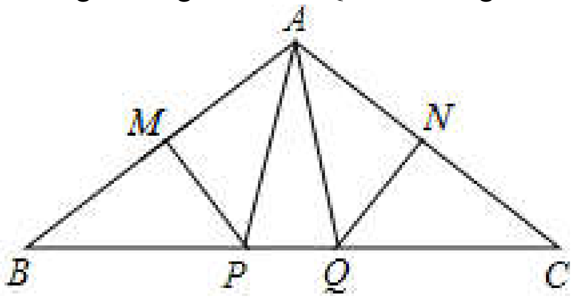
649, topic: FIG, ∠E =∠1, ∠3 + ∠ABC =180 °, BE is the bisector ∠ABC, Proof: . DF // AB #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000030586_Q_1.jpg","coordinates":{"D":"-9.54,5.38","E":"-9.05,6.85","F":"-7.99,5.38","A":"-10.00,4.00","B":"-7.00,4.00","C'":"-6.00,7.00"},"collineations":{"0":"E###D###A","1":"E###F###B","2":"D###F","3":"A###B","4":"B###C'"},"variable-equals":{"0":"∠1=∠ABE","1":"∠2=∠EBC","2":"∠3=∠EDF"},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: EqualityRelation{∠DEF=∠ABF},EqualityRelation{∠EDF+∠ABC=(Pi)},AngleBisectorRelation{line=BE,angle=∠ABC, angle1=∠ABE, angle2=∠CBE},ProveConclusionRelation:[Proof: LineParallelRelation [iLine1=DF, iLine2=AB]]

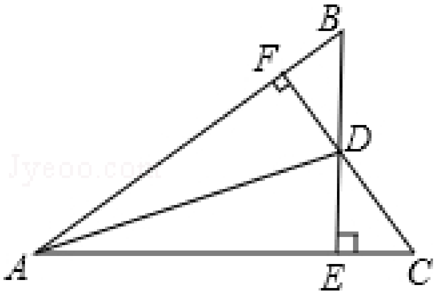
650, topic: FIG, ∠BAC =110 °, if the MP, NQ, respectively, the perpendicular bisector of AB, AC, seeking the degree ∠PAQ #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000072735_Q_1.jpg","coordinates":{"A":"-6.00,8.00","B":"-11.00,5.00","C":"-2.28,4.99","M":"-8.50,6.50","N":"-4.14,6.49","P":"-7.60,4.99","Q":"-5.36,4.99"},"collineations":{"0":"A###P","1":"A###Q","2":"M###P","3":"N###Q","4":"A###M###B","5":"A###N###C","6":"B###P###Q###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: EqualityRelation {∠MAN =(11/18 * Pi)}, MiddlePerpendicularRelation [iLine1 =MP, iLine2 =AB, crossPoint =Optional.of (M)], MiddlePerpendicularRelation [iLine1 =NQ, iLine2 =AC, crossPoint =Optional. of (N)], find the size of the angle: AngleRelation {angle =∠PAQ}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] ∠PAQ)}

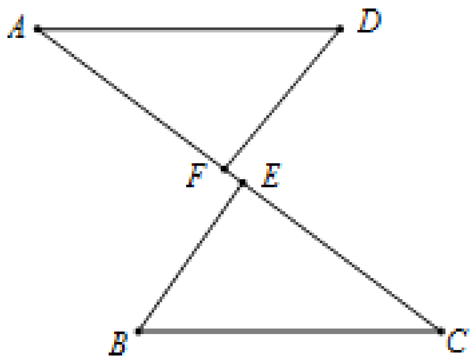
651, topic: FIG known in BE⊥AC E, CF⊥AB in F, BE, CF intersect at points D, if BD =CD, Proof: AD bisects ∠BAC #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"24EFB20AAEEE46F59BC747B7092BF89E.jpg","coordinates":{"A":"-14.00,4.00","B":"-9.00,9.00","C":"-6.93,4.00","D":"-9.00,6.07","E":"-9.00,4.00","F":"-10.46,7.54"},"collineations":{"0":"A###F###B","1":"D###A","2":"A###C###E","3":"B###D###E","4":"C###D###F"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: LinePerpRelation{line1=BE, line2=AC, crossPoint=E},LinePerpRelation{line1=CF, line2=AB, crossPoint=F},LineCrossRelation [crossPoint=Optional.of(D), iLine1=BE, iLine2=CF],EqualityRelation{BD=CD},ProveConclusionRelation:[Proof: AngleBisectorRelation{line=AD,angle=∠EAF, angle1=∠DAE, angle2=∠DAF}]

652, topic: FIG, AE =CF, AD =BC, DF =BE, Proof: AD // BC #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000032754_Q_1.jpg","coordinates":{"A":"1.50,-1.40","B":"5.30,-12.80","C":"16.70,-12.80","D":"12.90,-1.40","E":"9.30,-7.30","F":"8.60,-6.60"},"collineations":{"0":"A###F###E###C","1":"D###A","2":"D###F","3":"B###E","4":"B###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: EqualityRelation{AE=CF},EqualityRelation{AD=BC},EqualityRelation{DF=BE},ProveConclusionRelation:[Proof: LineParallelRelation [iLine1=AD, iLine2=BC]]

653, topic: FIG. 1, △ABC and △DCE are equilateral triangles, points A, D, E in the same line, is connected BE #% # <img＞#% # (1) confirmation; AD =BE. ; #% # (2) find the degree of ∠AEB; #% # (3) in FIG. 2, △ACB and △DCE are isosceles, and ∠ACB =∠DCE =90 °, the point a, D, E in the same line, CM is high on the edge of △DCE in DE, connected BE, please determine the relationship between the number of ∠AEB degrees and line CM, AE, BE, and explain the reasons.

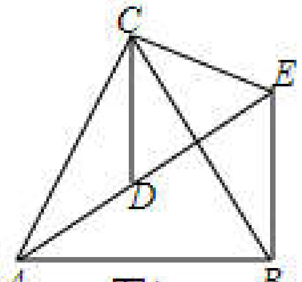


图1

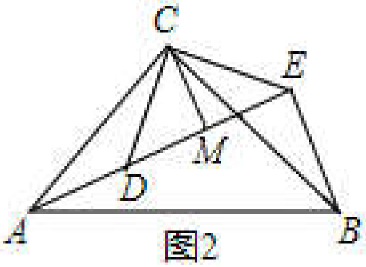
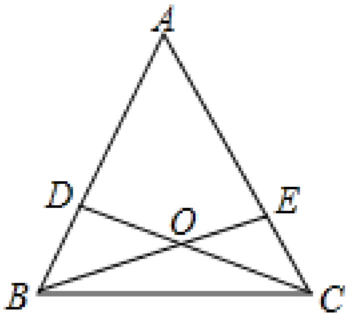


图2

graph:
{"stem":{"pictures":[],"appliedproblems":{}},"substems":[{"substemid":"1","questionrelies":"","pictures":[{"picturename":"1000038106_Q_1.jpg","coordinates":{"A":"-6.14,0.98","B":"-2.87,0.97","C":"-4.50,3.81","D":"-4.42,2.01","E":"-2.90,2.98"},"collineations":{"0":"A###D###E","1":"B###C","2":"C###D","3":"B###A","4":"A###C","5":"C###E","6":"B###E"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},{"substemid":"2","questionrelies":"1"},{"substemid":"3","questionrelies":"","pictures":[{"picturename":"1000038106_Q_1.jpg","coordinates":{"A":"-9.55,-0.61","B":"-4.68,-0.61","C":"-7.12,1.83","D":"-7.49,0.50","E":"-5.79,1.46","M":"-6.65,0.98"},"collineations":{"0":"A###D###M###E","1":"A###B","2":"B###C","3":"C###A","4":"C###D","5":"C###M","6":"C###E","7":"B###E"},"variable-equals":{},"circles":[]}],"appliedproblems":{}}]}

NLP:
RegularTriangleRelation:RegularTriangle:△ABC,RegularTriangleRelation:RegularTriangle:△DCE,PointOnLineRelation{point=A, line=StraightLine[n_0] analytic :y=k_n_0*x+b_n_0 slope:null b:null isLinearFunction:false, isConstant=false, extension=false},PointOnLineRelation{point=D, line=StraightLine[n_0] analytic :y=k_n_0*x+b_n_0 slope:null b:null isLinearFunction:false, isConstant=false, extension=false},PointOnLineRelation{point=E, line=StraightLine[n_0] analytic :y=k_n_0*x+b_n_0 slope:null b:null isLinearFunction:false, isConstant=false, extension=false},SegmentRelation:BE,Calculation:AngleRelation{angle=∠BED},(ExpressRelation:[key:]2),IsoscelesTriangleRelation:IsoscelesTriangle:△ACB[Optional.of(A)],IsoscelesTriangleRelation:IsoscelesTriangle:△DCE[Optional.of(E)],MultiEqualityRelation [multiExpressCompare=∠ACB=∠DCE=(1/2*Pi), originExpressRelationList=[], keyWord=null, result=null],PointOnLineRelation{point=A, line=StraightLine[n_0] analytic :y=k_n_0*x+b_n_0 slope:null b:null isLinearFunction:false, isConstant=false, extension=false},PointOnLineRelation{point=D, line=StraightLine[n_0] analytic :y=k_n_0*x+b_n_0 slope:null b:null isLinearFunction:false, isConstant=false, extension=false},PointOnLineRelation{point=E, line=StraightLine[n_0] analytic :y=k_n_0*x+b_n_0 slope:null b:null isLinearFunction:false, isConstant=false, extension=false},TriangleRelation:△DCE,SegmentRelation:DE,LinePerpRelation{line1=CM, line2=DE, crossPoint=},SegmentRelation:BE,Calculation:(ExpressRelation:[key:]∠BED), Calculation:(ExpressRelation:[key:](CM/AE)),Calculation:(ExpressRelation:[key:](AE/BE)),LinePerpRelation{line1=CM, line2=AM, crossPoint=M},ProveConclusionRelation:[Proof: EqualityRelation{AD=BE}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]∠BED)},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]∠BED)}, SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:](CM/AE))},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:](AE/BE))}

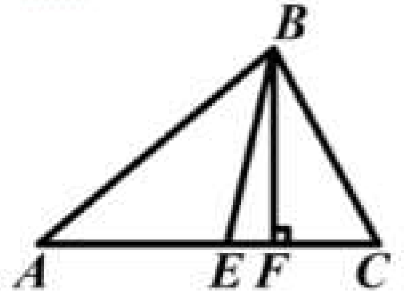
654, topic: Given: FIG, AB =AC, AD =AE, BE and CD intersect at point O. Proof: △ABE≌ △ACD #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000072673_Q_1.jpg","coordinates":{"A":"2.00,4.00","B":"0.00,0.00","C":"4.00,0.00","D":"0.50,1.01","E":"3.50,1.01","O":"2.00,0.58"},"collineations":{"0":"A###D###B","1":"B###C","2":"C###E###A","3":"C###O###D","4":"B###O###E"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: EqualityRelation{AB=AC},EqualityRelation{AD=AE},LineCrossRelation[crossPoint=Optional.of(O), iLine1=BE, iLine2=CD],ProveConclusionRelation:[Proof: TriangleCongRelation{triangleA=△ABE, triangleB=△ACD}]

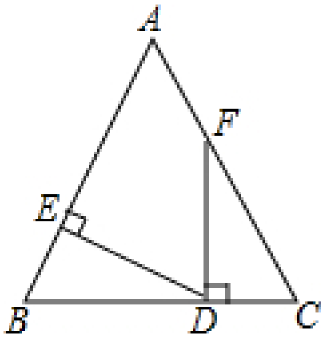
655, topic: FIG at $ \triangle ABC $ is known BE $\angle ABC$ $ $ is the bisector, BF is high, and $ \angle C > \angle A $ Proof: $ \angle EBF =\frac {1 } {2} (\angle C-\angle A) $.



graph:
{"stem":{"pictures":[{"picturename":"1000022490_Q_1.jpg","coordinates":{"A":"-5.00,0.00","B":"0.00,4.00","C":"3.00,0.00","E":"-0.51,0.00","F":"0.00,0.00"},"collineations":{"0":"A###E###F###C","1":"A###B","2":"B###E","3":"B###F","4":"B###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleRelation:△ABC,AngleBisectorRelation{line=BE,angle=∠ABC, angle1=∠ABE, angle2=∠CBE},InequalityRelation{∠BCF>∠BAE},LinePerpRelation{line1=BF, line2=AF, crossPoint=F},ProveConclusionRelation:[Proof: EqualityRelation{∠EBF=(1/2)*(∠BCF-∠BAE)}]

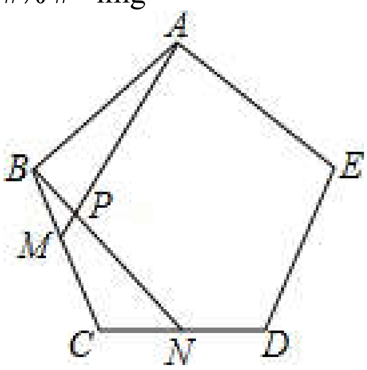
656, topic: FIG, $ \triangle ABC $ in, $ \angle A =50 ° $, $ AB =AC $, $ DF\perp BC $, $ DE\perp AB $, $ \angle EDF $ required degree.



graph:
{"stem":{"pictures":[{"picturename":"1000021699_Q_1.jpg","coordinates":{"A":"0.00,6.43","B":"-3.00,0.00","C":"3.00,0.00","D":"1.00,0.00","E":"-2.29,1.53","F":"1.00,4.29"},"collineations":{"0":"A###F###C","1":"E###B###A","2":"D###E","3":"D###F","4":"B###D###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleRelation: △ABC, EqualityRelation {∠EAF =(5/18 * Pi)}, EqualityRelation {AB =AC}, LinePerpRelation {line1 =DF, line2 =BC, crossPoint =D}, LinePerpRelation {line1 =DE, line2 =AB, crossPoint =E}, the size of the required angle: AngleRelation {angle =∠EDF}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] ∠EDF)}

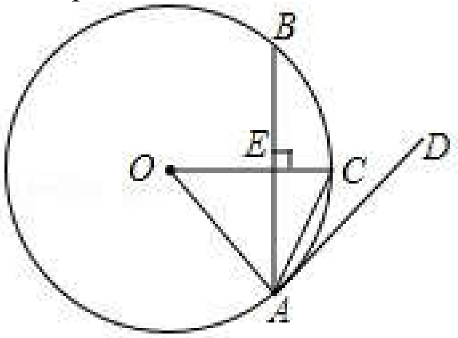
657, topic: FIG regular pentagon ABCDE, points M, N are the BC side, a point on the CD, and BM =CN, AM cross-BN (1) to verify the point P #% #:. △ABM≌ △BCN;. #% # (2) find the degree ∠APN #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000031945_Q_1.jpg","coordinates":{"A":"-12.03,8.17","B":"-14.05,6.68","C":"-13.26,4.29","D":"-10.74,4.31","E":"-9.98,6.71","M":"-13.73,5.72","P":"-13.54,6.00","N":"-12.25,4.30"},"collineations":{"0":"A###P###M","1":"B###P###N","2":"C###N###D","3":"B###M###C","4":"B###A","5":"A###E","6":"E###D"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: PointOnLineRelation{point=M, line=BC, isConstant=false, extension=false},PointOnLineRelation{point=N, line=CD, isConstant=false, extension=false},EqualityRelation{BM=CN},LineCrossRelation [crossPoint=Optional.of(P), iLine1=AM, iLine2=BN],Calculation:AngleRelation{angle=∠APN},ProveConclusionRelation:[Proof: TriangleCongRelation{triangleA=△ABM, triangleB=△BCN}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]∠APN)}

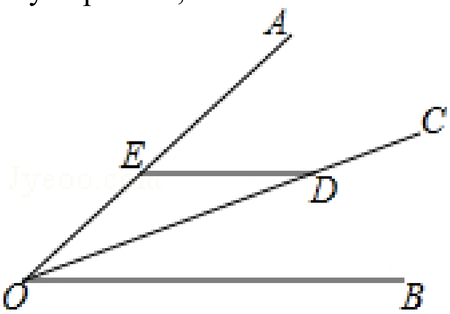
658, topic: FIG at $ ⊙O $ radius -OC $ $ $ perpendicular to the chord AB, point pedal $ $ E. ? # $ # $% (1) If the $ $ OC =5, AB =8, $ seeking $ tan∠BAC;? $ #% # $ (2) $ If $ ∠DAC =∠BAC, $ and at point D $ ⊙O $ outside, determines the position of the linear relationship between the AD $ and $ $ ⊙O $ and prove. ? #% #



graph:
{"stem":{"pictures":[{"picturename":"1000008332_Q_1.jpg","coordinates":{"A":"4.00,-3.00","B":"4.00,3.00","C":"5.00,0.00","D":"5.84,-0.55","E":"4.00,0.00","O":"0.00,0.00"},"collineations":{"0":"O###A","1":"A###E###B","2":"A###C","3":"D###A","4":"O###C###E"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"C###B###A"}]}],"appliedproblems":{}},"substems":[]}

NLP: RadiusRelation{radius=OC, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, length=null},CircleRelation{circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}},LinePerpRelation{line1=OC, line2=AB, crossPoint=E},ChordOfCircleRelation{chord=AB, circle=null, chordLength=null,straightLine=null},EqualityRelation{CO=5},EqualityRelation{AB=8},Calculation:(ExpressRelation:[key:]tan(∠CAE)),EqualityRelation{∠CAD=∠CAE},PointOutCircleRelation{point=Dcurve=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, points=[D]},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]tan(∠CAE))},JudgePostionConclusionRelation: [data1=AD, data2=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}]

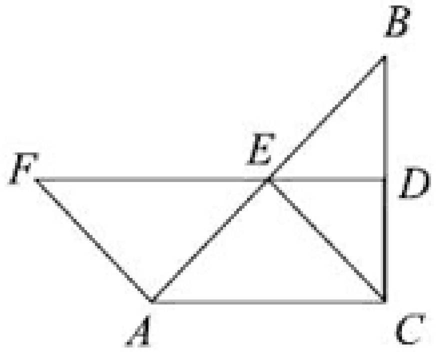
659, topic: FIG, D is the point on the bisector OC ∠AOB, through the cross point D as DE∥OB OA ray at point E, known ∠BOD =25 °, the required degree ∠OED #% # <. img>



graph:
{"stem":{"pictures":[{"picturename":"1000030634_Q_1.jpg","coordinates":{"A":"-11.09,6.93","C":"-9.49,6.20","B":"-8.95,4.52","E":"-12.30,5.11","D":"-11.06,5.25","O":"-12.99,4.07"},"collineations":{"0":"A###E###O","1":"C###D###O","2":"E###D","3":"O###B"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: AngleBisectorRelation{line=OC,angle=∠BOE, angle1=∠BOC, angle2=∠COE},PointOnLineRelation{point=D, line=OC, isConstant=false, extension=false},PointOnLineRelation{point=D, line=DE, isConstant=false, extension=false},LineParallelRelation [iLine1=DE, iLine2=OB],LineCrossRelation [crossPoint=Optional.of(E), iLine1=DE, iLine2=OA],EqualityRelation{∠BOD=(5/36*Pi)},Calculation:AngleRelation{angle=∠DEO},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]∠DEO)}

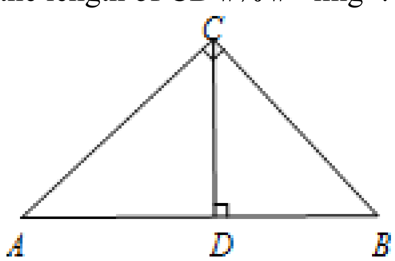
660, topic: As shown in the △ABC, ∠ACB =90 °, BC DE perpendicular bisector BC at points D, in the AB cross point E, point F on the DE, and AF =CE =AE #. % # (1) Proof: ACEF quadrilateral is a parallelogram #% # (2) when what conditions ∠B meet, ACEF quadrilateral is a rhombus and explain the reasons #% # <img>.?.



graph:
{"stem":{"pictures":[{"picturename":"1000041787_Q_1.jpg","coordinates":{"A":"-11.00,4.00","B":"-8.00,7.00","C":"-8.00,4.00","D":"-8.00,5.50","E":"-9.50,5.50","F":"-12.50,5.50"},"collineations":{"0":"A###C","1":"A###F","2":"A###E###B","3":"B###D###C","4":"C###E","5":"F###E###D"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: MiddlePerpendicularRelation [iLine1=DE, iLine2=BC, crossPoint=Optional.of(D)],TriangleRelation:△ABC,EqualityRelation{∠ACD=(1/2*Pi)},LineCrossRelation [crossPoint=Optional.of(D), iLine1=DE, iLine2=BC],LineCrossRelation [crossPoint=Optional.of(E), iLine1=DE, iLine2=AB],PointOnLineRelation{point=F, line=DE, isConstant=false, extension=false},MultiEqualityRelation [multiExpressCompare=AF=CE=AE, originExpressRelationList=[], keyWord=null, result=null],RhombusRelation{rhombus=Rhombus:ACEF},Calculation:AngleRelation{angle=∠DBE},ProveConclusionRelation:[Proof: ParallelogramRelation{parallelogram=Parallelogram:ACEF}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]∠DBE)}

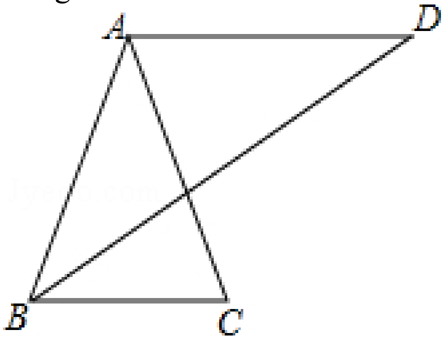
661, topic: As shown in the △ABC, ∠ACB =90 °, AC =16, BC =12, CD⊥AB, D. demand pedal is AB, the length of CD #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000082953_Q_1.jpg","coordinates":{"A":"-5.09,-0.49","B":"-0.09,-0.41","C":"-1.93,1.96","D":"-1.89,-0.44"},"collineations":{"0":"A###D###B","1":"A###C","2":"B###C","3":"D###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleRelation: △ABC, EqualityRelation {∠ACB =(1/2 * Pi)}, EqualityRelation {AC =16}, EqualityRelation {BC =12}, LinePerpRelation {line1 =CD, line2 =AB, crossPoint =D}, evaluation (size) :(ExpressRelation: [key:] AB), evaluation (size) :(ExpressRelation: [key:] CD), SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] AB)}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] CD)}

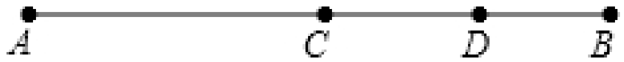
662, topic: (2015 · Suqian) As is known AB =AC =AD, and AD∥BC, confirmation: ∠C =2∠D #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000031144_Q_1.jpg","coordinates":{"A":"-13.04,5.00","B":"-13.75,1.01","C":"-12.34,1.01","D":"-9.00,5.00"},"collineations":{"0":"A###B","1":"A###C","2":"A###D","3":"B###D","4":"B###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: MultiEqualityRelation [multiExpressCompare=AB=AC=AD, originExpressRelationList=[], keyWord=null, result=null],LineParallelRelation [iLine1=AD, iLine2=BC],ProveConclusionRelation:[Proof: EqualityRelation{∠ACB=2*∠ADB}]

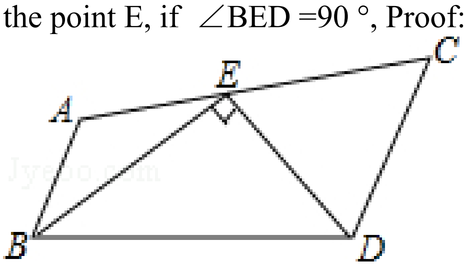
663, topic: FIG, AB =8cm, C is the midpoint of a line segment AB, D is the midpoint of CB, find the length of AD #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000072221_Q_1.jpg","coordinates":{"A":"-13.00,4.00","B":"-5.00,4.00","C":"-9.00,4.00","D":"-7.00,4.00"},"collineations":{"0":"A###C###D###B"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: EqualityRelation{AD=v_0},EqualityRelation{AB=8},MiddlePointOfSegmentRelation{middlePoint=C,segment=AB},MiddlePointOfSegmentRelation{middlePoint=D,segment=CB},Calculation:(ExpressRelation:[key:]v_0),SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]AD)}

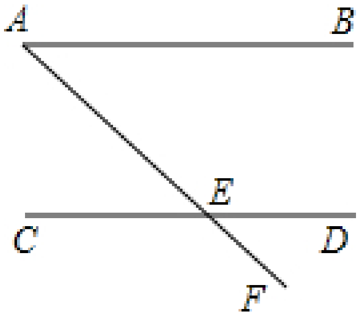
664, topic: As shown in FIG, BE equally ∠ABD, DE equally ∠CDB, BE AC and DE intersecting in the point E, if ∠BED =90 °, Proof: . AB∥CD #% # <img>



graph: {"stem":{"pictures":[{"picturename":"1000030569_Q_1.jpg","coordinates":{"A":"0.99,2.66","B":"0.00,0.00","C":"9.81,4.84","D":"8.00,0.00","E":"5.40,3.75"},"collineations":{"0":"D###E","1":"E###B","2":"B###A","3":"A###E###C","4":"C###D","5":"D###B"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: AngleBisectorRelation{line=BE,angle=∠ABD, angle1=∠ABE, angle2=∠DBE},AngleBisectorRelation{line=DE,angle=∠BDC, angle1=∠BDE, angle2=∠CDE},LineCrossRelation [crossPoint=Optional.of(E), iLine1=BE, iLine2=DE],PointOnLineRelation{point=E, line=AC, isConstant=false, extension=false},EqualityRelation{∠BED=(1/2*Pi)},ProveConclusionRelation:[Proof: LineParallelRelation [iLine1=AB, iLine2=CD]]

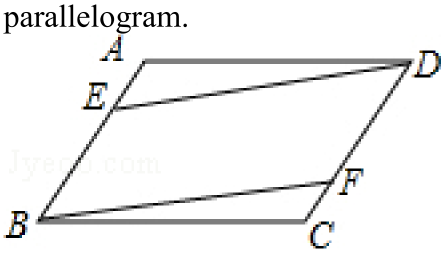
665, topic: FIG known ∠BAF =55 °, the line CD at point cross AF E, and ∠CEF =125 °, the test description: AB // CD #% # <img>.



graph: {"stem":{"pictures":[{"picturename":"1000032958_Q_1.jpg","coordinates":{"A":"0.00,5.00","B":"8.00,5.00","C":"0.00,0.00","D":"8.00,0.00","E":"3.50,0.00","F":"5.90,-3.43"},"collineations":{"0":"B###A","1":"A###E###F","2":"C###E###D"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: EqualityRelation{∠BAE=(11/36*Pi)},LineCrossRelation [crossPoint=Optional.of(E), iLine1=CD, iLine2=AF],EqualityRelation{∠CEF=(25/36*Pi)},ProveConclusionRelation:[Proof: LineParallelRelation [iLine1=AB, iLine2=CD]]

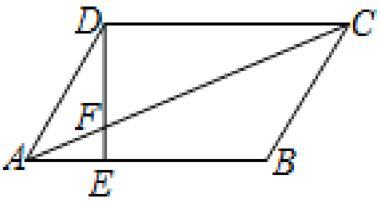
666, topic: as shown in the parallelogram ABCD, E, F, respectively, AB, CD edge and $ AE =CF $ #% # (1) Prove:.? $ \ Vartriangle ADE \ cong \ vartriangle CBF $?; #% # (2) Proof: BFDE quadrilateral is a parallelogram.



graph: {"stem":{"pictures":[{"picturename":"1000001144_Q_1.jpg","collineations":{"1":"D###F###C","2":"D###A","3":"D###E","4":"B###F","5":"B###C","0":"A###E###B"},"coordinates":{"D":"-8.02,7.83","E":"-16.48,6.98","F":"-10.32,5.19","A":"-15.72,7.86","B":"-18.79,4.34","C":"-11.09,4.31"},"questionrelies":"","variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: ParallelogramRelation{parallelogram=Parallelogram:ABCD},PointOnLineRelation{point=E, line=AB, isConstant=false, extension=false},PointOnLineRelation{point=F, line=CD, isConstant=false, extension=false},EqualityRelation{AE=CF},ProveConclusionRelation:[Proof: TriangleCongRelation{triangleA=△ADE, triangleB=△CBF}],ProveConclusionRelation:[Proof: ParallelogramRelation{parallelogram=Parallelogram:BEDF}]

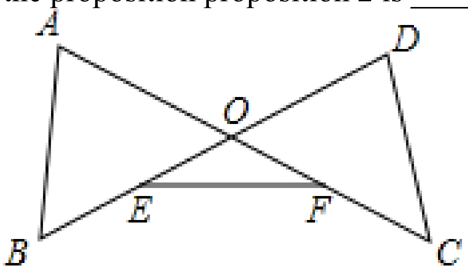
667, topic: as shown in the parallelogram ABCD, AE: EB =1:. 2 #% # (1) find $ \ frac {{{C} _ {\ vartriangle AEF}}} {{{C} _ {\ vartriangle CDF}}} $; #% # (2) if $ {{S} _ {\ vartriangle AEF}} =6 {{cm} ^ {2}} $, seeking $ {{S} _ {\ vartriangle CDF}} $. #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000062179_Q_1.jpg","coordinates":{"A":"-1.00,0.00","B":"2.00,0.00","C":"3.00,2.00","D":"0.00,2.00","E":"0.00,0.00","F":"0.00,0.50"},"collineations":{"0":"A###E###B","1":"F###A###C","2":"F###E###D","3":"D###C","4":"B###C","5":"A###D"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: ParallelogramRelation {parallelogram =Parallelogram: ABCD}, EqualityRelation {(AE) / (BE) =(1) / (2)}, evaluation (size) :(ExpressRelation: [key:] C_ △AEF) / C_ △CDF), EqualityRelation {S_ △AEF) =6}, evaluation (size) :(ExpressRelation: [key:] S_ △CDF)), SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] C_ △AEF) / C_ △CDF)}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] S_ △CDF))}

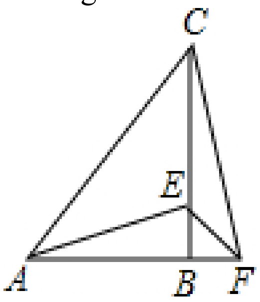
668, topic: FIG known segment AC and BD intersect at point O, the connection AB, DC, point E is the midpoint of OB, OC midpoint point F connected EF #% # (1) add a condition. . ∠A =∠D, ∠OEF =∠OFE Proof: AB =DC; #% # (2), respectively "∠A =∠D" referred to as ① , "∠OEF =∠OFE" referred to ② , "AB =DC "referred to as ③ , addition conditions ① , ③ , ② the conclusion configured to proposition 1, addition conditions ② , ③ , ① to constitute the conclusion proposition 2. proposition 1 is _____ proposition, the proposition proposition 2 is _____ (optional "true" or "false"). #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000081419_Q_1.jpg","coordinates":{"A":"-2.54,-0.19","B":"-3.27,-3.99","C":"2.75,-4.29","D":"2.40,-0.42","E":"-1.71,-3.01","F":"1.30,-3.16","O":"-0.16,-2.03"},"collineations":{"0":"A###O###C","1":"B###O###D","2":"A###B","3":"E###F","4":"D###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP:

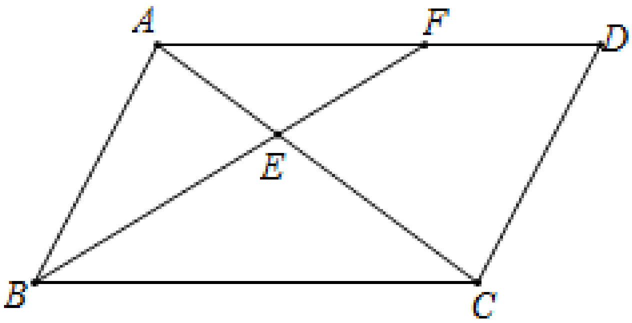
669, topic: As shown in the △ABC, AB =BC, ∠ABC =90 °, F is a point on an extension line AB, the point E on BC, BE =BF, coupling AE, EF and CF #% #. (1) Proof: AE =CF; #% # (2) if ∠CAE =30 °, the degree of seeking ∠EFC #% # <img>.



graph: {"stem":{"pictures":[{"picturename":"1000063717_Q_1.jpg","coordinates":{"A":"-4.00,0.00","B":"0.00,0.00","C":"0.00,4.00","E":"0.00,1.00","F":"1.00,0.00"},"collineations":{"0":"A###F###B","1":"B###E###C","2":"C###F","3":"A###C","4":"A###E","5":"F###E"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleRelation:△ABC,EqualityRelation{AB=BC},EqualityRelation{∠ABE=(1/2*Pi)},PointOnLineRelation{point=F, line=AB, isConstant=false, extension=true},PointOnLineRelation{point=E, line=BC, isConstant=false, extension=false},EqualityRelation{BE=BF},SegmentRelation:AE,SegmentRelation:EF,EqualityRelation{∠CAE=(1/6*Pi)},Calculation:AngleRelation{angle=∠CFE},ProveConclusionRelation:[Proof: EqualityRelation{AE=CF}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]∠CFE)}

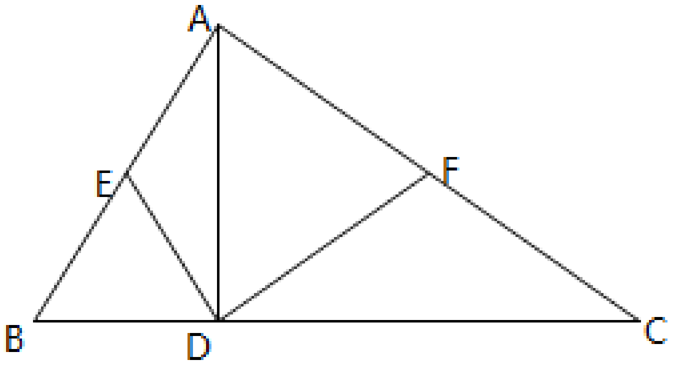
670, topic: As shown in the □ABCD, ∠ABC BF respectively bisector AC, AD at point E, F #% # (1) Prove:. AB =AF; #% # (2) when AB =3, BC =5, seeking $ \ frac {AE} {AC} $ value. #% # <img>



graph: {"stem":{"pictures":[{"picturename":"1000062123_Q_1.jpg","coordinates":{"A":"1.00,2.83","B":"0.00,0.00","C":"5.00,0.00","D":"6.00,2.83","E":"2.50,1.77","F":"4.00,2.83"},"collineations":{"0":"F###A###D","1":"E###A###C","2":"E###F###B","3":"A###B","4":"C###B","5":"C###D"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: ParallelogramRelation{parallelogram=Parallelogram:ABCD},LineCrossRelation [crossPoint=Optional.of(E), iLine1=BF, iLine2=AC],LineCrossRelation [crossPoint=Optional.of(F), iLine1=BF, iLine2=AD],AngleBisectorRelation{line=BF,angle=∠ABC, angle1=∠ABF, angle2=∠CBF},PointRelation:F,EqualityRelation{AB=3},EqualityRelation{BC=5},Calculation:(ExpressRelation:[key:]((AE)/(AC))),ProveConclusionRelation:[Proof: EqualityRelation{AB=AF}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]((AE)/(AC)))}

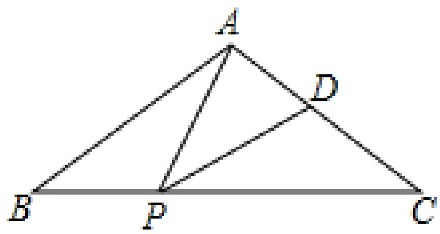
671, topic: As shown in the △ABC, the AD is high on the side BC, DE, DF respectively AB, midline, AB =6 on the AC, AC =8 long seek DE + DF #% #. <img>



graph:
{"stem":{"pictures":[{"picturename":"1000072718_Q_1.jpg","coordinates":{"A":"1.80,2.40","B":"0.00,0.00","C":"5.00,0.00","D":"1.80,0.00","E":"0.90,1.20","F":"3.40,1.20"},"collineations":{"0":"B###E###A","1":"B###D###C","2":"C###F###A","3":"D###E","4":"D###F","5":"A###D"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleRelation:△ABC,LinePerpRelation{line1=AD, line2=BC, crossPoint=D},LineDecileSegmentRelation [iLine1=DE, iLine2=AB, crossPoint=Optional.of(E)],LineDecileSegmentRelation [iLine1=DF, iLine2=AC, crossPoint=Optional.of(F)],EqualityRelation{AB=6},EqualityRelation{AC=8},Calculation:(ExpressRelation:[key:]DE+DF),LinePerpRelation{line1=AD, line2=BD, crossPoint=D},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]DE+DF)}

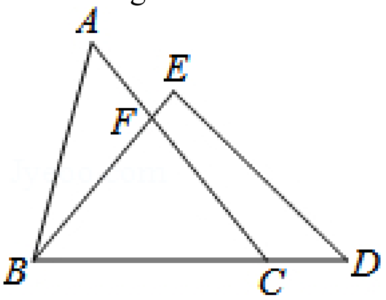
672, topic: As shown in the △ABC, AB =AC, the point P, D are points BC, AC edge, and ∠APD =∠B #% # (1) Prove:. $ AC \ cdot CD =CP \ cdot BP $;. #% # (2) If AB =10, BC =12, when PD // AB, long seeking BP #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000041744_Q_1.jpg","coordinates":{"A":"-6.00,6.00","B":"-9.00,2.00","C":"-3.00,2.00","D":"-3.92,3.22","P":"-4.83,2.00"},"collineations":{"0":"B###A","1":"A###D###C","2":"B###P###C","3":"A###P","4":"P###D"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleRelation:△ABC,EqualityRelation{AB=AC},PointOnLineRelation{point=P, line=BC, isConstant=false, extension=false},PointOnLineRelation{point=D, line=AC, isConstant=false, extension=false},EqualityRelation{∠APD=∠ABP},EqualityRelation{BP=v_0},EqualityRelation{AB=10},EqualityRelation{BC=12},LineParallelRelation [iLine1=PD, iLine2=AB],Calculation:(ExpressRelation:[key:]v_0),ProveConclusionRelation:[Proof: EqualityRelation{AC*CD=CP*BP}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]BP)}

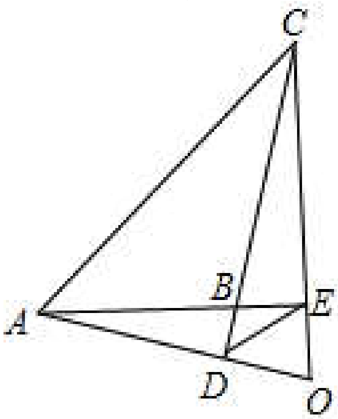
673, topic: As shown in △ABC and △BDE, the point C on the side of the BD, BE side AC control edge at point F. When the AC =BD, AB =ED, BC =BE, Proof: $ \ angle ACB =\ frac {1} {2} \ angle AFB $. #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000030733_Q_1.jpg","coordinates":{"A":"-9.29,5.54","B":"-10.00,2.00","C":"-5.76,2.00","D":"-5.00,2.00","E":"-7.00,5.00","F":"-7.88,4.12"},"collineations":{"0":"B###C###D","1":"A###B","2":"A###F###C","3":"B###F###E","4":"E###D"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleRelation:△ABC,TriangleRelation:△BDE,PointOnLineRelation{point=C, line=BD, isConstant=false, extension=false},LineCrossRelation [crossPoint=Optional.of(F), iLine1=AC, iLine2=BE],EqualityRelation{AC=BD},EqualityRelation{AB=DE},EqualityRelation{BC=BE},ProveConclusionRelation:[Proof: EqualityRelation{∠BCF=(1/2)*∠AFB}]

674, topic: As shown, a point O (the intersection of three high orthocenter of triangle i.e., where a straight line) △ABC orthocenter, AO is connected to the extension lines cross CB points D, extension line AB connecting cross-CO in point E, is connected DE . Prove:. △ODE∽ △OCA #% # <img>

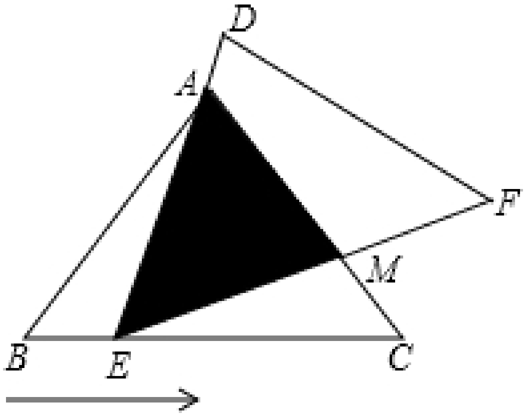


graph:
{"stem":{"pictures":[{"picturename":"1000034923_Q_1.jpg","coordinates":{"A":"-7.00,4.00","B":"-4.78,4.02","C":"-4.00,7.00","D":"-4.92,3.46","E":"-3.97,4.03","O":"-3.99,3.23"},"collineations":{"0":"A###D###O","1":"C###E###O","2":"A###B###E","3":"A###C","4":"D###B###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: CoreAndShapeRelation:O/△ABC/OrthoCentre,LineCrossRelation [crossPoint=Optional.of(D), iLine1=AO, iLine2=CB],LineCrossRelation [crossPoint=Optional.of(E), iLine1=CO, iLine2=AB],SegmentRelation:DE,ProveConclusionRelation:[Proof: TriangleSimilarRelation{triangleA=△ODE, triangleB=△OCA}]

675, topic: As shown in △ABC is known AB =AC =5, BC =6, and △ABC≌ △DEF, △DEF will coincide with the △ABC, △ABC does not move, △DEF movement, and satisfying: E point B on side BC along the direction of movement C, and DE always passing point a, EF and AC intersect at points M% # #

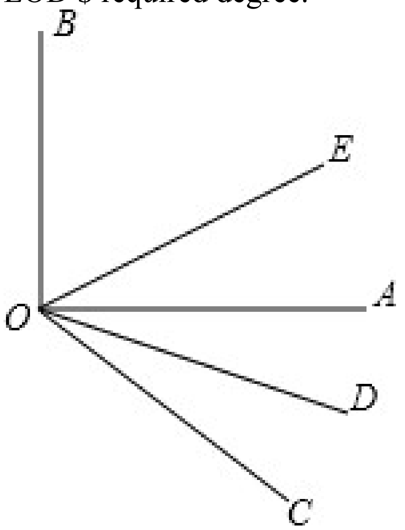
(1) Prove:. △ABE∽ △ECM; #% # (2) Research: △DEF in motion, if the overlapped portion can constitute an isosceles triangle, BE determined length; if not, please explain why #% # <img>?.



graph:
{"stem":{"pictures":[{"picturename":"1000041748_Q_1.jpg","coordinates":{"A":"-6.00,6.00","B":"-9.00,2.00","C":"-3.00,2.00","D":"-5.76,6.47","E":"-8.00,2.00","F":"-2.10,3.07","M":"-3.60,2.80"},"collineations":{"0":"A###M###C","1":"B###E###C","2":"A###B","3":"D###A###E","4":"E###M###F","5":"D###F"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleRelation:△ABC,MultiEqualityRelation [multiExpressCompare=AB=AC=5, originExpressRelationList=[], keyWord=null, result=null],EqualityRelation{BC=6},TriangleCongRelation{triangleA=△ABC, triangleB=△DEF},TriangleRelation:△ABC,TriangleRelation:△DEF,PointOnLineRelation{point=A, line=DE, isConstant=false, extension=false},LineCrossRelation [crossPoint=Optional.of(M), iLine1=EF, iLine2=AC],EqualityRelation{BE=v_0},Calculation:(ExpressRelation:[key:]v_0),ProveConclusionRelation:[Proof: TriangleSimilarRelation{triangleA=△ABE, triangleB=△ECM}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]BE)}

676, topic: FIG, $ ∠AOB =100 ° $, OE is $ $ ∠BOC bisector, the OD is $ bisector ∠AOC $, $ ∠EOD $ required degree.

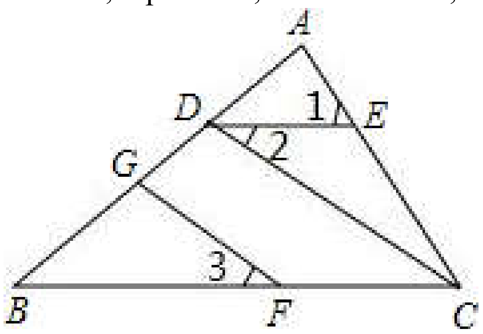


graph:
{"stem":{"pictures":[{"picturename":"1000021447_Q_1.jpg","coordinates":{"A":"5.00,0.00","B":"-0.86,4.86","C":"4.67,-1.70","D":"4.90,-0.86","E":"3.83,3.21","O":"0.00,0.00"},"collineations":{"0":"B###O","1":"E###O","2":"A###O","3":"D###O","4":"C###O"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},

"substems":[]}

NLP: EqualityRelation {∠AOB =(5/9 * Pi)}, AngleBisectorRelation {line =OE, angle =∠BOC, angle1 =∠BOE, angle2 =∠COE}, AngleBisectorRelation {line =OD, angle =∠AOC, angle1 =∠AOD, angle2 = ∠COD}, aNGULAR size: AngleRelation {angle =∠DOE}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] ∠DOE)}

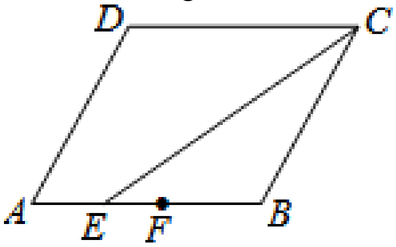
677, topic: FIG, ∠1 =∠ACB, ∠2 =∠3, Proof: ∠BDC + ∠DGF =180 ° #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000063471_Q_1.jpg","coordinates":{"A":"4.32,0.40","B":"1.67,-2.01","C":"5.72,-2.01","D":"3.18,-0.64","E":"4.92,-0.64","F":"3.71,-2.01","G":"2.43,-1.32"},"collineations":{"0":"B###A###G###D","1":"E###A###C","2":"F###B###C","3":"G###F","4":"C###D","5":"E###D"},"variable-equals":{"0":"∠1=∠AED","1":"∠2=∠CDE","2":"∠3=∠BFG"},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: EqualityRelation{∠AED=∠ECF},EqualityRelation{∠CDE=∠BFG},ProveConclusionRelation:[Proof: EqualityRelation{∠CDG+∠DGF=(Pi)}]

678, topic: As shown in □ABCD, it is known ∠DCB CE is bisector, F is the midpoint of AB, AB =6, BC =4, seeking AE: EF:. #% Of the value of the FB # < img>

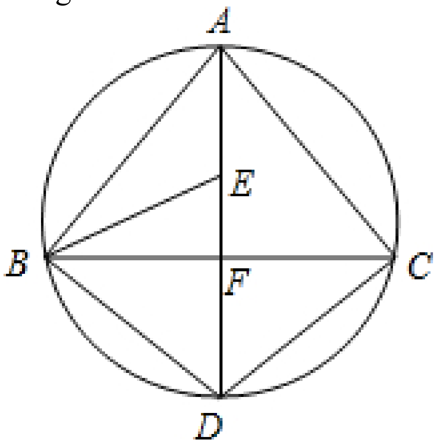


graph:
{"stem":{"pictures":[{"picturename":"1000062092_Q_1.jpg","coordinates":{"A":"5.00,4.00","B":"11.00,4.00","C":"13.16,7.37","D":"7.16,7.37","E":"7.00,4.00","F":"8.00,4.00"},"collineations":{"0":"A###E###F###B","1":"B###C","2":"C###D","3":"D###A","4":"C###E"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP:
ParallelogramRelation{parallelogram=Parallelogram:ABCD},AngleBisectorRelation{line=CE,angle=∠BCD, angle1=∠BCE, angle2=∠DCE},MiddlePointOfSegmentRelation{middlePoint=F,segment=AB},EqualityRelation{AB=6},EqualityRelation{BC=4},Calculation:ProportionRelation{proportion=Proportion{proportionFactor=[Express:[AE], Express:[EF], Express:[BF]], value=null}},SolutionConclusionRelation{relation=Calculation:ProportionRelation{proportion=Proportion{

proportionFactor=[Express:[AE], Express:[EF], Express:[BF]], value=null}}}

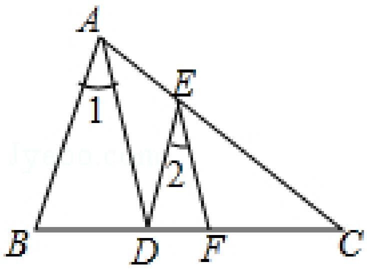
679, topic: FIG, △AD is the diameter of the circumscribed circle ABC, AD⊥BC, pedal is F, ∠ABC cross the bisector AD at point E, is connected BD, CD #% # (1) Prove:. BD =CD;? #% # (2) Please determination B, E, C are on three points as the center point D to a circle radius and DB reasons #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000080966_Q_1.jpg","coordinates":{"A":"-8.12,2.70","B":"-10.96,-2.79","C":"-5.12,-2.71","D":"-8.02,-4.32","E":"-8.07,-1.00","F":"-8.04,-2.75","O":"-8.07,-0.81"},"collineations":{"0":"B###A","1":"C###A","2":"C###D","3":"D###B","4":"B###E","5":"B###F###C","6":"A###E###F###D###O"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"A###B###D###C"}]}],"appliedproblems":{}},"substems":[]}

NLP: InscribedShapeOfCircleRelation{closedShape=△ABC, circle=Circle[⊙O_0]{center=O_0, analytic=(x-x_O_0)^2+(y-y_O_0)^2=r_O_0^2}},AngleBisectorRelation{line=BE,angle=∠ABF, angle1=∠ABE, angle2=∠EBF},DiameterRelation{diameter=AD, circle=Circle[⊙O_0]{center=O_0, analytic=(x-x_O_0)^2+(y-y_O_0)^2=r_O_0^2}, length=null},LinePerpRelation{line1=AD, line2=BC, crossPoint=F},SegmentRelation:BD,SegmentRelation:CD,CircleCenterRelation{point=D, conic=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}},RadiusRelation{radius=DB, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, length=null},ProveConclusionRelation:[Proof: EqualityRelation{BD=CD}],ProveConclusionRelation:[Proof: PointOnCircleRelation{circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, points=[B]}],ProveConclusionRelation:[Proof: PointOnCircleRelation{circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, points=[E]}],ProveConclusionRelation:[Proof: PointOnCircleRelation{circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, points=[C]}]

680, topic: FIG, AD equally ∠BAC, EF equally ∠DEC, and ∠1 ∠2, the positional relationship between the test described in DE-AB =#% # <img>.

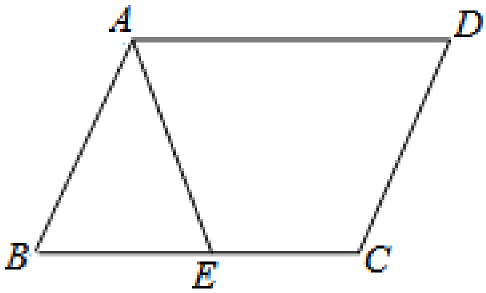


graph:

{"stem":{"pictures":[{"picturename":"40D86224443B4015B468C77A3F7AC4EF.jpg","coordinates":{"A":"-13.00,6.00","B":"-14.00,3.00","C":"-7.00,3.00","D":"-11.76,3.00","E":"-11.08,5.04","F":"-10.23,3.00"},"collineations":{"0":"A###E###C","1":"D###A","2":"B###A","3":"B###D###C###F","4":"D###E","5":"E###F"},"variable-equals":{"0":"∠1=∠BAD","1":"∠2=∠DEF"},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: AngleBisectorRelation{line=AD,angle=∠BAE, angle1=∠BAD, angle2=∠DAE},AngleBisectorRelation{line=EF,angle=∠CED, angle1=∠CEF, angle2=∠DEF},EqualityRelation{∠BAD=∠DEF},JudgePostionConclusionRelation: [data1=DE, data2=AB]

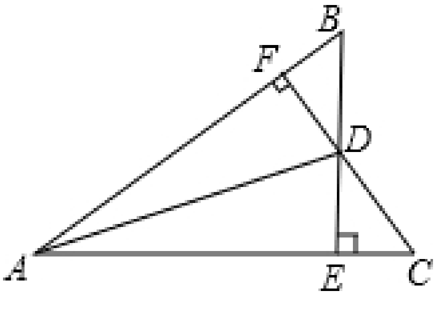
681, topic: the parallelogram ABCD, E is a little edge BC, connecting AE, AB =AE Proof:. ∠DAE = ∠D #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000040569_Q_1.jpg","coordinates":{"A":"2.00,4.00","B":"0.00,0.00","C":"5.00,0.00","D":"7.00,4.00","E":"4.00,0.00"},"collineations":{"0":"E###B###C","1":"B###A","2":"A###E","3":"C###D","4":"A###D"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: ParallelogramRelation{parallelogram=Parallelogram:ABCD},PointOnLineRelation{point=E, line=BC, isConstant=false, extension=false},SegmentRelation:AE,EqualityRelation{AB=AE},ProveConclusionRelation:[Proof: EqualityRelation{∠DAE=∠ADC}]

682, topic: FIG known in BE⊥AC E, CF⊥AB in F, BE, CF intersect at points D, if BD =CD #% # Proof:. AD bisects ∠BAC #% # <img>

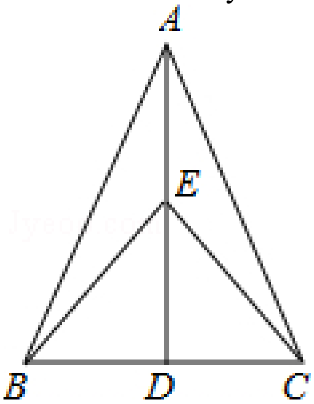


graph:
{"stem":{"pictures":[{"picturename":"1000041469_Q_1.jpg","coordinates":{"A":"0.00,0.00","B":"4.29,4.29","C":"6.07,0.00","D":"4.29,1.78","E":"4.29,0.00","F":"3.04,3.04"},"collineations":{"0":"A###F###B","1":"A###E###C","2":"F###D###C","3":"B###D###E","4":"D###A"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: LinePerpRelation{line1=BE, line2=AC, crossPoint=E},LinePerpRelation{line1=CF, line2=AB, crossPoint=F},LineCrossRelation [crossPoint=Optional.of(D), iLine1=BE, iLine2=CF],EqualityRelation{BD=CD},ProveConclusionRelation:[Proof:

AngleBisectorRelation{line=AD,angle=∠EAF, angle1=∠DAE, angle2=∠DAF}]

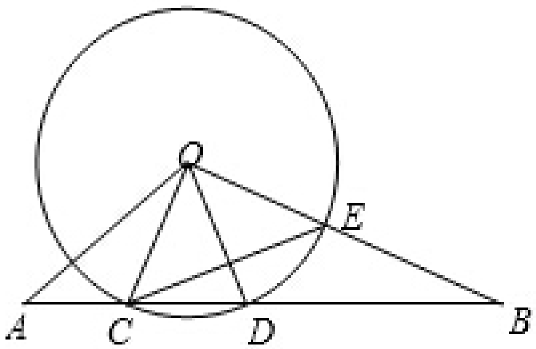
683, topic: As shown in the △ABC, AB =AC, D is the midpoint of BC, the point E on the AD, with the nature of the axisymmetric description:. BE =CE #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"42573E84F70548978EFDFD146DB79038.jpg","coordinates":{"A":"-9.00,10.00","B":"-12.00,4.00","C":"-6.00,4.00","D":"-9.00,4.00","E":"-9.00,6.00"},"collineations":{"0":"B###A","1":"C###A","2":"B###E","3":"C###E","4":"A###E###D","5":"B###C###D"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP:
TriangleRelation:△ABC,EqualityRelation{AB=AC},MiddlePointOfSegmentRelation{middlePoint=D,segment=BC},PointOnLineRelation{point=E, line=AD, isConstant=false, extension=false},ProveConclusionRelation:[Proof: EqualityRelation{BE=CE}]

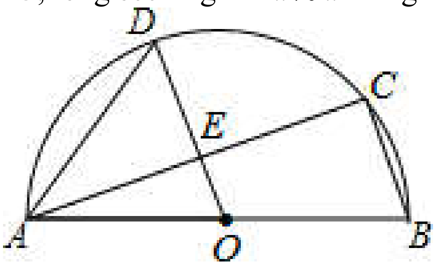
684, topic: FIG radius of $ \odot O $ 6, $ \odot O $ line segment AB and intersect at points C, D, $ AC =4 $, $ \angle BOD =\angle A $, OB and $ \odot O $ at point E, set $ OA =x $, $ CD =y $. (1) BD request length; (2) y with respect to x find analytic function formula; (3) when the $ CE\perp OD $, rectification of AO.



graph:
{"stem":{"pictures":[{"picturename":"1000026049_Q_1.jpg","coordinates":{"A":"-7.32,5.00","B":"-12.32,-5.00","C":"-3.32,-5.00","D":"3.32,-5.00","E":"5.56,-2.26","O":"0.00,0.00"},"collineations":{"0":"O###C","1":"E###C","2":"D###C###B###A","3":"O###D","4":"O###B###E","5":"O###A"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"C###D###E"}]}],"appliedproblems":{}},"substems":[{"substemid":"1","questionrelies":"2","pictures":[],"appliedproblems":{}},{"substemid":"2","questionrelies":"1","pictures":[],"appliedproblems":{}},{"substemid":"3","questionrelies":"2","pictures":[],"appliedproblems":{}}]}

NLP: RadiusRelation {radius =null, circle =Circle [⊙O] {center =O, analytic =(x-x_O) ^ 2 + (y-y_O) ^ 2 =r_O ^ 2}, length =Express: [6] }, LineCrossCircleRelation {line =AB, circle =⊙O, crossPoints =[C, D], crossPointNum =2}, EqualityRelation {AC =4}, EqualityRelation {∠BOD =∠A}, LineCrossCircleRelation {line =OB, circle =⊙O, crossPoints =[E], crossPointNum =1}, EqualityRelation {AO =x}, EqualityRelation {CD =y}, EqualityRelation {BD =v_0}, EqualityRelation {AO =v_1}, LinePerpRelation {line1 =CE, line2 =OD, crossPoint =}, evaluation (size) :(ExpressRelation: [key:] v_0), the relationship between the expression: DualExpressRelation {expresses =[Express: [y], Express: [x]]}, evaluation (size) :(ExpressRelation: [key:] v_1), SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] BD)}, SolutionConclusionRelation {relation =the relationship between the expression: DualExpressRelation {expresses =[Express: [y], Express: [x]]}}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] AO)}

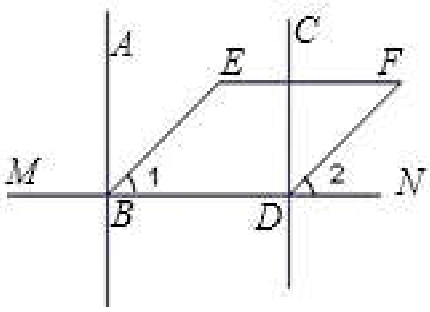
685, topic:. As shown, AB is the diameter of the semicircle O, C, D are points on the semicircle O, and OD // BC, OD and AC at point E #% # (1) if ∠B =70 ° , seeking ∠CAD degree;. #% # (2) If AB =4, AC =3, long seeking DE #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000060736_Q_1.jpg","coordinates":{"A":"4.00,0.00","B":"8.00,0.00","C":"6.25,1.98","D":"4.68,1.50","E":"5.12,0.99","O":"6.00,0.00"},"collineations":{"0":"A###C###E","1":"B###A###O","2":"D###E###O","3":"B###C","4":"A###D"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"A###B###C###D"}]}],"appliedproblems":{}},"substems":[]}

NLP: DiameterRelation{diameter=AB, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, length=null},PointOnCircleRelation{circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, points=[C, D]},LineParallelRelation [iLine1=OD, iLine2=BC],LineCrossRelation [crossPoint=Optional.of(E), iLine1=OD, iLine2=AC],EqualityRelation{∠CBO=(7/18*Pi)},Calculation:AngleRelation{angle=∠DAE},EqualityRelation{DE=v_0},EqualityRelation{AB=4},EqualityRelation{AC=3},Calculation:(ExpressRelation:[key:]v_0),SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]∠DAE)},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]DE)}

686, topic: FIG known: AB⊥MN, CD⊥MN, pedal of B, D, BE, DF are equally ∠ABN, ∠CDN test description:.. BE // DF #% # <img>

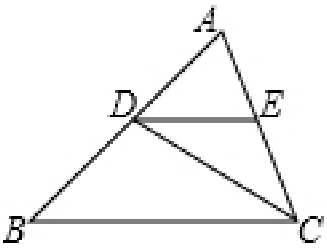


graph:
{"stem":{"pictures":[{"picturename":"43DB8D5FC2CB4430896DF9CE02D50819.jpg","coordinates":{"A":"-12.00,6.00","B":"-12.00,3.00","C":"-9.00,6.00","D":"-9.00,3.00","E":"-10.00,5.00","F":"-7.00,5.00","M":"-14.00,3.00","N":"-7.00,3.00"},"collineations":{"0":"B###A","1":"C###D","2":"B###E","3":"D###F","4":"

E###F","5":"B###M###N###D"},"variable-equals":{"0":"∠1=∠EBD","1":"∠2=∠FDN"},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: LinePerpRelation{line1=AB, line2=MN, crossPoint=B},LinePerpRelation{line1=CD, line2=MN, crossPoint=D},AngleBisectorRelation{line=BE,angle=∠ABD, angle1=∠ABE, angle2=∠DBE},AngleBisectorRelation{line=DF,angle=∠CDN, angle1=∠CDF, angle2=∠FDN},ProveConclusionRelation:[Proof: LineParallelRelation [iLine1=BE, iLine2=DF]]

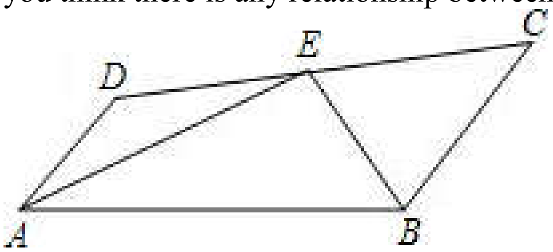
687, topic: As shown in the △ABC, CD is the bisector of △ABC, DE∥BC, cross AC at point E, known ∠AED =64 °, ∠A =80 °, the degree of seeking ∠BDC . #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000063423_Q_1.jpg","coordinates":{"A":"1.17,2.60","B":"-2.92,-0.37","C":"2.62,-0.37","D":"-0.35,1.49","E":"1.71,1.49"},"collineations":{"0":"B###A###D","1":"E###A###C","2":"C###B","3":"C###D","4":"E###D"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleRelation:△ABC,TriangleRelation:△ABC,LineParallelRelation [iLine1=DE, iLine2=BC],LineCrossRelation [crossPoint=Optional.of(E), iLine1=DE, iLine2=AC],EqualityRelation{∠AED=(16/45*Pi)},EqualityRelation{∠DAE=(4/9*Pi)},Calculation:AngleRelation{angle=∠BDC},AngleBisectorRelation{line=CD,angle=∠BCE, angle1=∠BCD, angle2=∠DCE},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]∠BDC)}

688, topic: FIG: E on the line segment CD, EA, EB and are equally ∠DAB ∠CBA, ∠AEB =90 ° is provided AD =x, BC =y, and $ {{(x-3)} ^. {2}} + | y-4 |.. =0 $ #% # (1) BC and AD seek long-#% # (2) Do you think there is any relationship between AD and BC and verify your conclusion #?. % # <img>

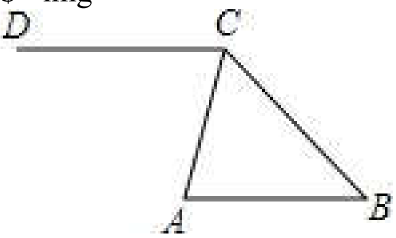


graph:
{"stem":{"pictures":[{"picturename":"CC7C7051D87C463686BEEE9C76F4F82E.jpg","coordinates":{"A":"-14.00,3.00","B":"-7.00,3.00","C":"-4.92,6.41","D":"-12.44,5.56","E":"-8.68,5.99"},"collineations":{"0":"B###A","1":"E###A","2":"A###D","3":"B###C","4":"B###E","5":"C###D###E"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[{"substemid":"2","questionrelies":"1","pictures":[],"appliedproblems":{}},{"substemid":"3","questionrelies":"1","pictures":[],"appliedproblems":{}}]}

NLP: PointOnLineRelation {point =E, line =CD, isConstant =false, extension =false}, AngleBisectorRelation {line =EA, angle =∠BAD, angle1 =∠BAE, angle2 =∠DAE}, AngleBisectorRelation {line =EB, angle =∠ABC, angle1 =∠ABE, angle2 =∠CBE}, EqualityRelation {∠AEB =(1/2 * Pi)}, EqualityRelation {AD =x}, EqualityRelation {BC =y}, EqualityRelation {((x-3) ^ 2) +

abs (y-4) =0}, evaluation (size) :(ExpressRelation: [key:] AD), evaluation (size) :(ExpressRelation: [key:] BC), evaluation (size) :(ExpressRelation: [key:] (AD / BC)), SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] AD)}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation : [key:] BC)}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] (AD / BC))}

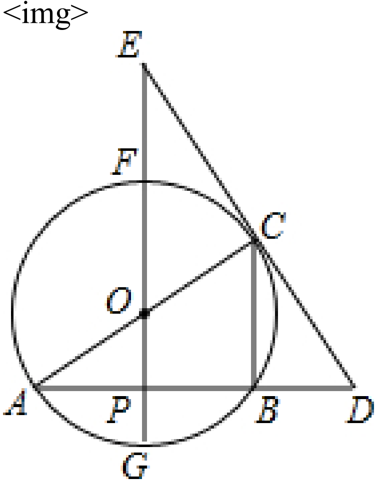
689, topic: FIG known $ ∠ACD =70 ° $, $ ∠ACB =60 ° $, $ ∠ABC =50 ° $ Proof: $ AB // CD $ <img>



graph:
{"stem":{"pictures":[{"picturename":"1000021752_Q_1.jpg","coordinates":{"A":"0.00,0.00","B":"7.00,0.00","C":"2.85,4.94","D":"-4.00,4.94"},"collineations":{"0":"A###C","1":"B###C","2":"D###C","3":"A###B"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: EqualityRelation{∠ACD=(7/18*Pi)},EqualityRelation{∠ACB=(1/3*Pi)},EqualityRelation{∠ABC=(5/18*Pi)},ProveConclusionRelation:[Proof: LineParallelRelation [iLine1=AB, iLine2=CD]]

690, topic: FIG, $ \ odot O $ in, FG, AC diameter, AB chord, FG⊥AB, cross pedal extension line AB is a straight line point P, at point C through points D, cross GF extended line at point E, known AB =4, $ \ radius of odot O $ $ \ sqrt {5} $ #% # (1) are determined line segment AP, CB long;. #% # (2) If OE =5, Proof: DE is $ \ odot O $ tangent; #% # (3) if $ \ tan \ angle E =\ frac {3} {2} $, seeking DE long #% #. <img>

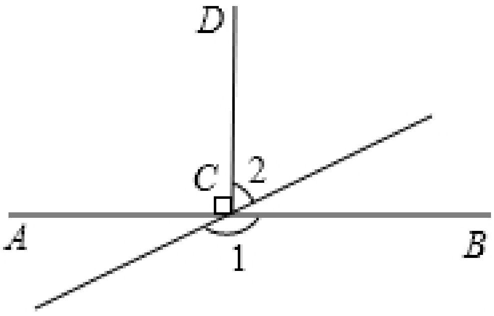


graph:
{"stem":{"pictures":[{"picturename":"1000060769_Q_1.jpg","coordinates":{"A":"-2.02,-0.96","B":"2.02,-0.96","C":"1.99,1.02","E":"0.00,4.97","D":"2.99,-0.98","F":"0.00,2.24","G":"0.00,-2.24","O":"0.00,0.00","P":"0.00,-0.96"},"collineations":{"0":"A###O###C","1":"A###P###B###D","2":"E###F###O###P###G","3":"C###B","4":"E###C###D"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"A###C###G###B###F"}]}],"appliedproblems":{}},"substems":[]}

NLP: CircleRelation{circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}},DiameterRelation{diameter=FG, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, length=null},DiameterRelation{diameter=AC, circle=Circle[⊙

O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, length=null},ChordOfCircleRelation{chord=AB, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, chordLength=null,straightLine=null},LinePerpRelation{line1=FG, line2=AB, crossPoint=P},EqualityRelation{AB=4},RadiusRelation{radius=null, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, length=Express:[(5^(1/2))]},LineCrossRelation [crossPoint=Optional.of(E), iLine1=GF, iLine2=ED],LineCrossRelation [crossPoint=Optional.of(D), iLine1=AB, iLine2=ED],PointOnLineRelation{point=C, line=ED, isConstant=false, extension=false},Calculation:(ExpressRelation:[key:]AP),Calculation:(ExpressRelation:[key:]BC),EqualityRelation{EO=5},EqualityRelation{DE=v_1},EqualityRelation{tan(∠CEF)=(3/2)},Calculation:(ExpressRelation:[key:]v_1),SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]AP)},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]BC)}, ProveConclusionRelation:[Proof: LineContactCircleRelation{line=DE, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, contactPoint=Optional.of(C), outpoint=Optional.absent()}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]DE)}

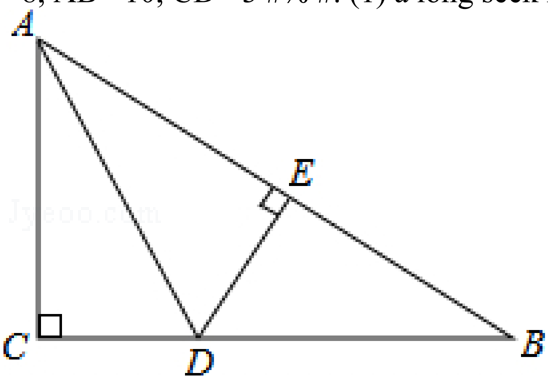
691, topic: FIG, CD⊥AB, pedal is C, ∠1 =130 °, the required degree ∠2 #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000072271_Q_1.jpg","coordinates":{"A":"-3.00,0.00","B":"3.00,0.00","C":"0.00,0.00","D":"0.00,3.00","E":"1.93,2.30","F":"-2.00,-2.38"},"collineations":{"0":"A###C###B","1":"E###C###F","2":"C###D"},"variable-equals":{"0":"∠1=∠BCF","1":"∠2=∠DCE"},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: LinePerpRelation {line1 =CD, line2 =AB, crossPoint =C}, EqualityRelation {∠BCF =(13/18 * Pi)}, the size of the required angle: (ExpressRelation: [key:] ∠DCE), SolutionConclusionRelation {relation =evaluation (size) :(ExpressRelation: [key:] ∠DCE)}

692, topic: As shown in the Rt △ABC, ∠C =90 °, AD equally ∠CAB, DE⊥AB in E, if AC =6, BC =8, AB =10, CD =3 #% #. (1) a long seek DE;% # # (2) the required △ADB area #% # <img>.

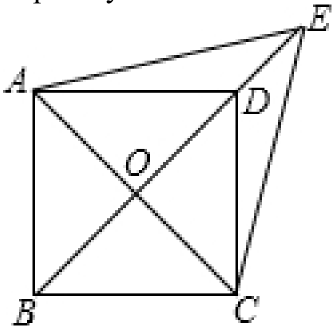


graph:

{"stem":{"pictures":[{"picturename":"4AD58AC2681C42258AB272C9A119593A.jpg","coordinates":{"A":"-14.00,9.00","B":"-6.00,3.00","C":"-14.00,3.00","D":"-11.00,3.00","E":"-9.20,5.40"},"collineations":{"0":"A###B###E","1":"A###C","2":"D###A","3":"C###B###D","4":"D###E"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: RightTriangleRelation:RightTriangle:△ABC[Optional.of(C)],EqualityRelation{∠ACD=(1/2*Pi)},AngleBisectorRelation{line=AD,angle=∠CAE, angle1=∠CAD, angle2=∠DAE},LinePerpRelation{line1=DE, line2=AB, crossPoint=E},EqualityRelation{AC=6},EqualityRelation{BC=8},EqualityRelation{AB=10},EqualityRelation{CD=3},EqualityRelation{DE=v_0},Calculation:(ExpressRelation:[key:]v_0),EqualityRelation{S_△ABD=v_1},Calculation:(ExpressRelation:[key:]v_1),SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]DE)},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]S_△ABD)}

693, topic: FIG known □ABCD in the AC diagonal, BD intersect at point O, E is a point of an extension line BD, and the equilateral triangle △ACE #% # (1) Proof: quadrangle ABCD is a rhombus; #% # (2) when the number of ∠AED and ∠EAD meet what relationship, the quadrilateral ABCD is a square explain your reasons #% # <img>?.

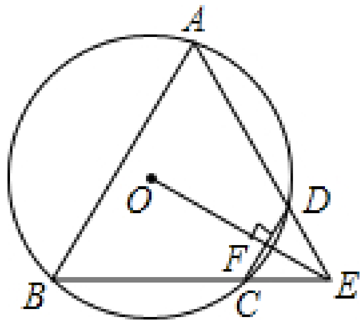


graph:

{"stem":{"pictures":[{"picturename":"1000061924_Q_1.jpg","coordinates":{"A":"0.00,4.00","B":"0.00,0.00","C":"4.00,0.00","D":"4.00,4.00","E":"5.46,5.46","O":"2.00,2.00"},"collineations":{"0":"A###B","1":"A###D","2":"A###E","3":"B###C","4":"E###C","5":"A###O###C","6":"B###O###D###E","7":"D###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: ParallelogramRelation{parallelogram=Parallelogram:ABCD},LineCrossRelation[crossPoint=Optional.of(O), iLine1=AC, iLine2=BD],PointOnLineRelation{point=E, line=BD, isConstant=false, extension=true},RegularTriangleRelation:RegularTriangle:△ACE,SquareRelation{square=Square:ABCD},JudgeTwoAnglesConnectRelation{ [∠AED,∠DAE]},ProveConclusionRelation:[Proof: RhombusRelation{rhombus=Rhombus:ABCD}],ProveConclusionRelation:[Proof: JudgeTwoAnglesConnectRelation{ [∠AED,∠DAE]}]

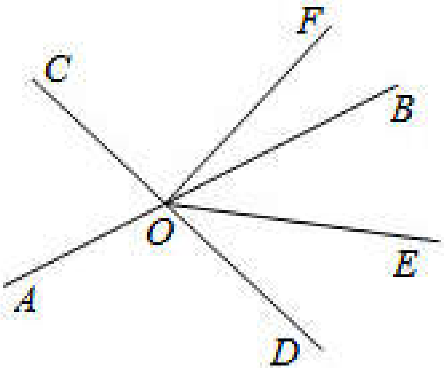
694, topic: FIG, quadrangle ABCD is ⊙O within the quadrilateral, BC and AD extension lines extended line at point E, and DC =DE #% # (1) Prove:. ∠A =∠AEB; #% # (2) is connected OE, CD cross at point F, OE⊥CD, Proof: . △ABE equilateral triangle #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000052574_Q_1.jpg","coordinates":{"A":"0.49,2.82","B":"-1.88,-2.16","C":"2.20,-1.84","D":"2.81,-0.55","E":"3.62,-1.72","F":"2.56,-1.19","O":"0.00,0.00"},"collineations":{"0":"A###B","1":"A###D###E","2":"B###C###E","3":"D###F###C","4":"O###F###E"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"A###B###C###D"}]}],"appliedproblems":{}},"substems":[]}

NLP: InscribedShapeOfCircleRelation{closedShape=ABCD, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}},LineCrossRelation [crossPoint=Optional.of(E), iLine1=BC, iLine2=AD],EqualityRelation{CD=DE},SegmentRelation:OE,LineCrossRelation [crossPoint=Optional.of(F), iLine1=OE, iLine2=CD],LinePerpRelation{line1=OE, line2=CD, crossPoint=F},ProveConclusionRelation:[Proof: EqualityRelation{∠BAD=∠CED}],ProveConclusionRelation:[Proof: RegularTriangleRelation:RegularTriangle:△ABE]

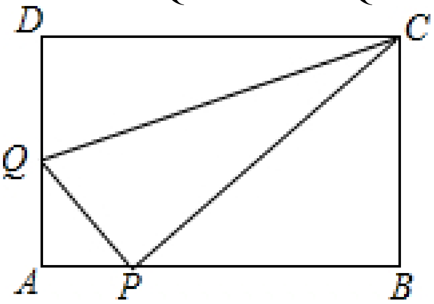
695, topic: As shown, the straight line AB, CD intersect at point O, OE equally ∠BOD, ∠AOC =76 °, ∠DOF =90 ° is required degree ∠EOF #% # <img>..



graph:
{"stem":{"pictures":[{"picturename":"1000051524_Q_1.jpg","coordinates":{"A":"-5.08,0.37","B":"-0.98,2.99","C":"-4.84,2.60","D":"-1.18,-0.41","E":"-0.47,1.25","F":"-1.59,3.65","O":"-3.42,1.43"},"collineations":{"0":"O###E","1":"O###F","2":"C###O###D","3":"A###O###B"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: LineCrossRelation [crossPoint =Optional.of (O), iLine1 =AB, iLine2 =CD], AngleBisectorRelation {line =OE, angle =∠BOD, angle1 =∠BOE, angle2 =∠DOE}, EqualityRelation {∠AOC =(19/45 * Pi)}, EqualityRelation {∠DOF =(1/2 * Pi)}, the size of the required angle: AngleRelation {angle =∠EOF}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key :] ∠EOF)}

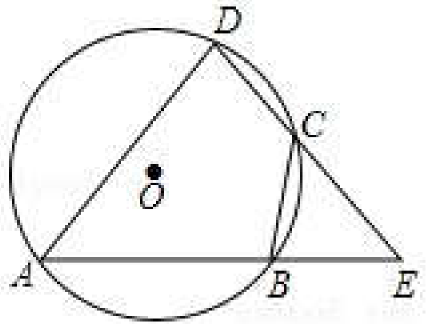
696, topic: As shown in the rectangle ABCD, AB =5, AD =3, point P is a point on the edge AB (not with A, B overlap) side, the CP is connected, through the point P as PQ⊥CP, cross AD to point Q, is connected CQ. when △CDQ≌ △CPQ, the rectification of AQ. #% # <img>



graph:
{"stem":{"pictures":[],"appliedproblems":{}},"substems":[{"substemid":"1","questionrelies":"","pictures":[{"picturename":"1000061895_Q_1.jpg","coordinates":{"A":"4.00,3.00","B":"9.00,3.00","C":"9.00,6.00","D":"4.00,6.00","P":"5.00,3.00","Q":"4.00,4.33"},"collineations":{"0":"A###P###B","1":"B###C","2":"C###D","3":"D###Q###A","4":"C###Q","5":"C###P","6":"Q###P"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},{"substemid":"2","questionrelies":"","pictures":[{"picturename":"1000061895_Q_1.jpg","coordinates":{"A":"12.00,3.00","B":"17.00,3.00","C":"17.00,6.00","D":"12.00,6.00","M":"14.50,5.50","P":"14.00,3.00","Q":"12.00,5.00"},"collineations":{"0":"A###P###B","1":"B###C","2":"C###D","3":"D###Q###A","4":"C###M###Q","5":"C###P","6":"D###M","7":"Q###P","8":"P###M"},"variable-equals":{},"circles":[]}],"appliedproblems":{}}]}

NLP:
EqualityRelation{AQ=v_0},PointRelation:A,PointRelation:B,RectangleRelation{rectangle=Rectangle:ABCD},EqualityRelation{AB=5},EqualityRelation{AD=3},PointOnLineRelation{point=P, line=AB, isConstant=false, extension=false},SegmentRelation:CP,LinePerpRelation{line1=PQ, line2=CP, crossPoint=P},LineCrossRelation [crossPoint=Optional.of(Q), iLine1=PQ, iLine2=AD],SegmentRelation:CQ,TriangleCongRelation{triangleA=△CDQ, triangleB=△CPQ},Calculation:(ExpressRelation:[key:]v_0),SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]AQ)}

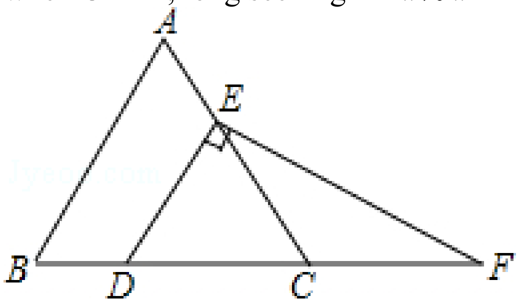
697, topic: FIG known A, B, C, D are four points on the $ \odot O $, extended DC, AB at point E, if the confirmation $ BC =BE $:. $ \triangle ADE $ is like isosceles triangle.



graph:
{"stem":{"pictures":[{"picturename":"1000008190_Q_1.jpg","coordinates":{"A":"-1.17,-5.71","B":"7.54,-5.90","C":"8.36,-0.72","D":"5.98,2.13","E":"12.78,-6.01","O":"3.25,-2.57"},"collineations":{"0":"D###C###E","1":"A###D","2":"B###C","3":"B###E###A"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"A###B###C###D"}]}],"appliedproblems":{}},"substems":[]}

NLP: PointOnCircleRelation{circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, points=[A, B, C, D]},LineCrossRelation [crossPoint=Optional.of(E), iLine1=DC, iLine2=AB],EqualityRelation{BC=BE},ProveConclusionRelation:[IsoscelesTriangleRelation:IsoscelesTriangle:△ADE[Optional.of(D)]]

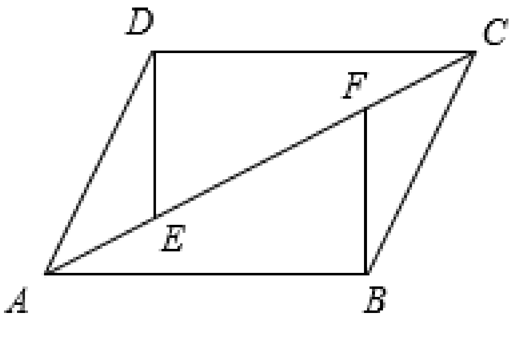
698, topic: FIG, equilateral triangle ABC, points D, E, respectively, the sides BC, the AC, DE∥AB, through the point E as EF⊥DE, BC extension lines cross at point F #% #. (1) find ∠F degree;. #% # (2) when CD =2, long seeking DF #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000031175_Q_1.jpg","coordinates":{"A":"-8.50,6.60","B":"-10.00,4.00","C":"-7.00,4.00","D":"-9.00,4.00","E":"-8.00,5.73","F":"-5.00,4.00"},"collineations":{"0":"B###D###C###F","1":"A###B","2":"A###E###C","3":"E###F","4":"E###D"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: RegularTriangleRelation:RegularTriangle:△ABC,PointOnLineRelation{point=D, line=BC, isConstant=false, extension=false},PointOnLineRelation{point=E, line=AC, isConstant=false, extension=false},LineParallelRelation [iLine1=DE, iLine2=AB],LinePerpRelation{line1=EF, line2=DE, crossPoint=E},LineCrossRelation [crossPoint=Optional.of(F), iLine1=EF, iLine2=BC],Calculation:AngleRelation{angle=∠CFE},EqualityRelation{DF=v_0},EqualityRelation{CD=2},Calculation:(ExpressRelation:[key:]v_0),SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]∠CFE)},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]DF)}

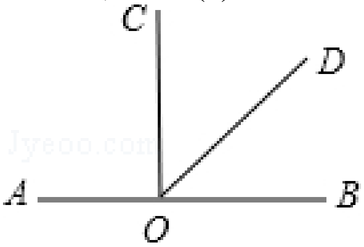
699, topic: As shown in the □ABCD, E, F are two points on the AC, and AE =CF #% # Proof:. DE =BF #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000041805_Q_1.jpg","coordinates":{"A":"-14.00,2.00","B":"-10.00,2.00","C":"-8.00,5.00","D":"-12.00,5.00","E":"-12.00,3.00","F":"-10.00,4.00"},"collineations":{"0":"A###E###F###C","1":"D###E","2":"A###D","3":"B###C","4":"F###B","5":"A###B","6":"C###D"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: ParallelogramRelation{parallelogram=Parallelogram:ABCD},PointOnLineRelation{point=E, line=AC, isConstant=false, extension=false},PointOnLineRelation{point=F, line=AC, isConstant=false, extension=false},EqualityRelation{AE=CF},ProveConclusionRelation:[Proof: EqualityRelation{DE=BF}]

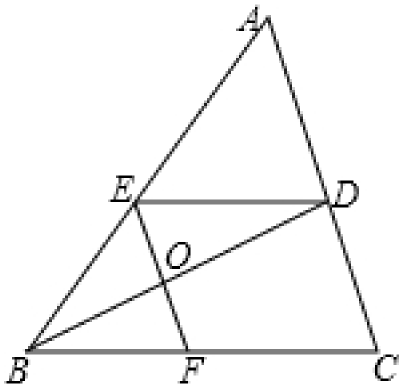
700, topic: FIG, AOB linearly, ∠AOD: ∠DOB =3: 1, OD bisecting ∠COB #% # (1) required degree ∠AOC;% # # (2) determines the position of AB and OC. relationship. #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"52185629F37C47E1AB4D1E119C7EF5ED.jpg","coordinates":{"A":"-14.00,3.00","B":"-6.00,3.00","C":"-10.00,8.00","D":"-6.00,7.00","O":"-10.00,3.00"},"collineations":{"0":"B###O###A","1":"O###C","2":"O###D"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: (ExpressRelation: [key:] AOB), EqualityRelation {(∠AOD) / (∠BOD) =(3) / (1)}, AngleBisectorRelation {line =OD, angle =∠BOC, angle1 =∠BOD, angle2 =∠COD}, aNGULAR size: AngleRelation {angle =∠AOC}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] ∠AOC)}, JudgePostionConclusionRelation: [data1 =AB, data2 =OC]

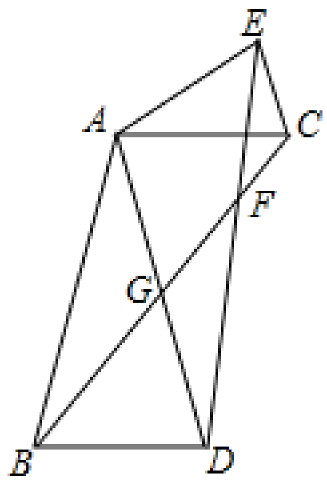
701, topic: Given: FIG, △ABC in, ∠B bisector AC BD cross at point D, DE∥BC, EF∥AC, EF BD cross at point O. Proof: BE =CF #% #. <img>



graph:
{"stem":{"pictures":[{"picturename":"1000034194_Q_1.jpg","coordinates":{"A":"-4.58,6.01","B":"-7.00,2.00","C":"-3.00,2.00","D":"-3.73,3.85","E":"-5.88,3.85","F":"-5.16,2.00","O":"-5.49,2.85"},"collineations":{"0":"A###E###B","1":"B###F###C","2":"C###D###A","3":"E###D","4":"B###O###D","5":"E###O###F"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: AngleBisectorRelation{line=BD,angle=∠B, angle1=∠DBE, angle2=∠DBF},TriangleRelation:△ABC,LineCrossRelation [crossPoint=Optional.of(D), iLine1=BD, iLine2=AC],LineParallelRelation [iLine1=DE, iLine2=BC],LineParallelRelation [iLine1=EF, iLine2=AC],LineCrossRelation [crossPoint=Optional.of(O), iLine1=EF, iLine2=BD],ProveConclusionRelation:[Proof: EqualityRelation{BE=CF}]

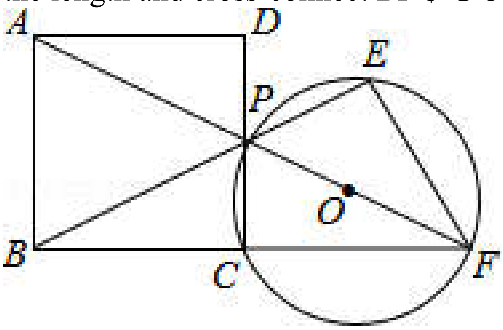
702, topic: As shown in the △ABD and △ACE, AB =AD, AC =AE, ∠BAD =∠CAE, connector BC, DE intersect at point F, BC and AD intersect at point G. Proof: △ABC ≌ △ADE. #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000050563_Q_1.jpg","coordinates":{"A":"-1.47,4.02","B":"-4.74,-4.29","C":"7.46,4.09","D":"1.93,-4.23","E":"4.91,10.25","F":"3.02,1.04","G":"0.48,-0.70"},"collineations":{"0":"A###G###D","1":"A###C","2":"A###B","3":"A###E","4":"G###B###F###C","5":"B###D","6":"D###E###F","7":"C###E"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP:
TriangleRelation:△ABD,TriangleRelation:△ACE,EqualityRelation{AB=AD},EqualityRelation{AC=AE},EqualityRelation{∠BAG=∠CAE},LineCrossRelation [crossPoint=Optional.of(F), iLine1=BC, iLine2=DE],LineCrossRelation [crossPoint=Optional.of(G), iLine1=BC, iLine2=AD],ProveConclusionRelation:[Proof: TriangleCongRelation{triangleA=△ABC, triangleB=△ADE}]

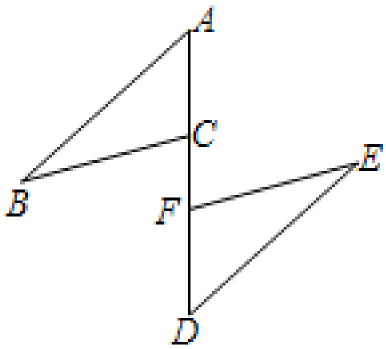
703, topic: As shown, the side length of the square ABCD 2, point P is the midpoint of the CD, cross-connect and extend AP extended line BC at point F., For $ △CPF $ $ ⊙O $ circumcircle , to extend the length and cross-connect BP $ ⊙O $ at point E, is connected EF, EF is seeking. <img>



graph:
{"stem":{"pictures":[{"picturename":"1000024965.jpg","coordinates":{"A":"0.00,4.00","B":"0.00,0.00","C":"4.00,0.00","D":"4.00,4.00","E":"6.40,3.20","F":"8.00,0.00","P":"4.00,2.00","O":"6.00,1.00"},"collineations":{"0":"A###B","1":"F###C###B","2":"F###O###P###A","3":"A###D","4":"P###D###C","5":"P###E###B","6":"E###F"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"P###F###E###C"}]}],"appliedproblems":{}},"substems":[]}

NLP: InscribedShapeOfCircleRelation{closedShape=△CPF, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}},EqualityRelation{EF=v_0},SquareRelation{square=Square:ABCD},EqualityRelation{AB=2},MiddlePointOfSegmentRelation{middlePoint=P,segment=CD},LineCrossRelation [crossPoint=Optional.of(F), iLine1=AP, iLine2=BC],CircleRelation{circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}},LineCrossCircleRelation{line=BP, circle=⊙O, crossPoints=[E], crossPointNum=1},SegmentRelation:EF,Calculation:(ExpressRelation:[key:]v_0),SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]EF)}

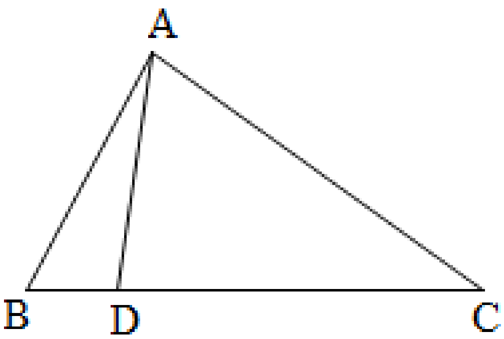
704, topic: As shown in the △DEF and △ABC, AB =DE, BC =EF, AF =DC Proof:. △ABC≌ △DEF #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"","coordinates":{"A":"-11.00,8.00","B":"-14.00,5.00","C":"-11.00,6.00","D":"-11.00,2.00","E":"-8.00,5.00","F":"-11.00,4.00"},"collineations":{"0":"C###A###D###F","1":"A###B","2":"B###C","3":"F###E","4":"D###E"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP:
TriangleRelation:△ABC,TriangleRelation:△DEF,EqualityRelation{AB=DE},EqualityRelation{BC=EF},EqualityRelation{AF=CD},ProveConclusionRelation:[Proof: TriangleCongRelation{triangleA=△ABC, triangleB=△DEF}]

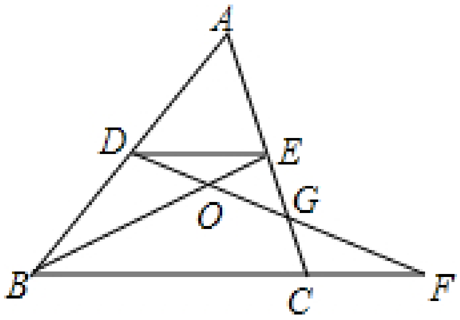
705, topic: FIG, D is a point on the side BC △ABC, and ∠BAD =∠C, Proof: $ \ frac {{{AD} ^ {2}}} {{{AC} ^ {2}} } =\ frac {BD} {BC} $. #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000062183_Q_1.jpg","coordinates":{"A":"-2.06,3.62","B":"-3.92,0.69","C":"1.43,0.71","D":"-1.62,0.70"},"collineations":{"0":"B###C###D","1":"B###A","2":"A###C","3":"A###D"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleRelation:△ABC,SegmentRelation:BC,PointOnLineRelation{point=D, line=BC, isConstant=false, extension=false},EqualityRelation{∠BAD=∠ACD},ProveConclusionRelation:[Proof: EqualityRelation{((((AD)^2))/(((AC)^2)))=((BD)/(BC))}]

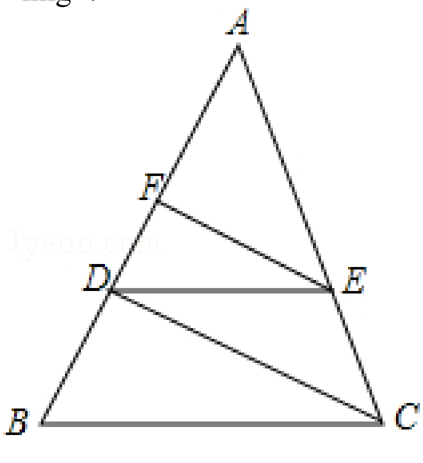
706, topic: As shown in the △ABC, points D, E are side AB, the midpoint of the AC, DF and G EC through the midpoint of the extended line BC at point F, BE and DF at point O. known △ADE an area of 2, a quadrangular seeking area BOGC. #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000062181_Q_1.jpg","coordinates":{"A":"1.20,2.00","B":"-1.20,-2.00","C":"2.80,-2.00","D":"0.00,0.00","E":"2.00,0.00","F":"4.80,-2.00","G":"2.40,-1.00","O":"1.20,-0.50"},"collineations":{"0":"A###E###G###C","1":"D###O###G###F","2":"B###F###C","3":"A###D###B","4":"E###D","5":"B###O###E"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP:
MiddlePointOfSegmentRelation{middlePoint=G,segment=EC},Know:QuadrilateralRelation{quadrilateral=BCGO},EqualityRelation{S_BCGO=v_0},TriangleRelation:△ABC,MiddlePointOfSegmentRelation{middlePoint=D,segment=AB},MiddlePointOfSegmentRelation{middlePoint=E,segment=AC},LineCrossRelation [crossPoint=Optional.of(F), iLine1=DF, iLine2=BC],PointOnLineRelation{point=G, line=DF, isConstant=false, extension=false},LineCrossRelation [crossPoint=Optional.of(O), iLine1=BE, iLine2=DF],EqualityRelation{S_△ADE=2},Calculation:(ExpressRelation:[key:]v_0),SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]S_BCGO)}

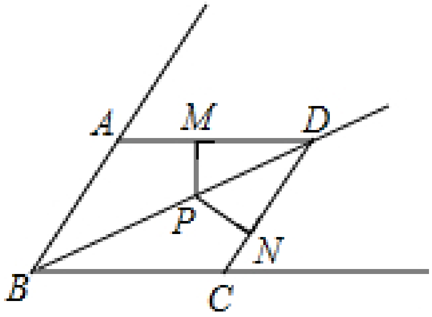
707, topic: FIG, △ABC medium, DE // BC, EF // CD Proof: AD and AB is a comparative term AF #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000062108_Q_1.jpg","coordinates":{"A":"9.00,10.00","B":"6.00,3.00","C":"11.00,3.00","D":"6.85,4.99","E":"10.43,4.99","F":"7.46,6.41"},"collineations":{"0":"A###F###D###B","1":"B###C","2":"C###E###A","3":"A###F###D###B","4":"F###E","5":"E###D","6":"D###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleRelation: △ABC, Line Parallel Relation [iLine1 =DE, iLine2 =BC], Line Parallel Relation [iLine1 =EC iLine2 =CD] ProveConclusionRelation: [证明: EqualityRelation {AD ^ 2 =AF * AB}]

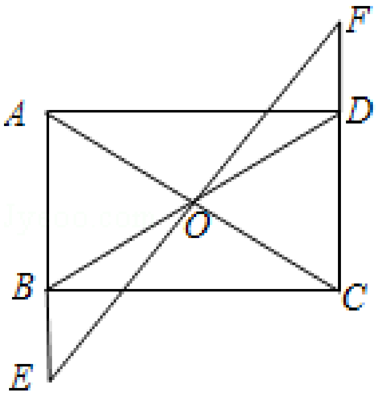
708, topic: FIG known BD is the bisector ∠ABC, AB =CB, point P on the BD, PM⊥AD at point M, PN⊥CD at point N, Proof: PM =PN #% # <img>



graph: {"stem":{"pictures":[{"picturename":"1000080526_Q_1.jpg","coordinates":{"A":"3.06,1.53","B":"0.00,0.00","C":"3.06,-1.53","D":"4.34,0.00","M":"3.63,0.85","N":"3.63,-0.85","P":"2.65,0.00"},"collineations":{"0":"B###P###D","1":"A###M###D","2":"C###N###D","3":"A###B","4":"B###C","5":"P###M","6":"P###N"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: AngleBisectorRelation{line=BD,angle=∠ABC, angle1=∠ABD, angle2=∠CBD},EqualityRelation{AB=BC},PointOnLineRelation{point=P, line=BD, isConstant=false, extension=false},LinePerpRelation{line1=PM, line2=AD, crossPoint=M},LinePerpRelation{line1=PN, line2=CD, crossPoint=N},ProveConclusionRelation:[Proof: EqualityRelation{MP=NP}]

709, topic: As shown in the rectangle ABCD, AC and BD O is the intersection of a straight line through the point O EF and AB, CD are cross extension line in E, F #% # (1) Proof: $ \ vartriangle BOE \ cong \ vartriangle DOF $; #% # (2) when the EF and AC meet anything to do with a, E, C, F is the vertex of the quadrilateral is a rhombus prove your conclusion?.

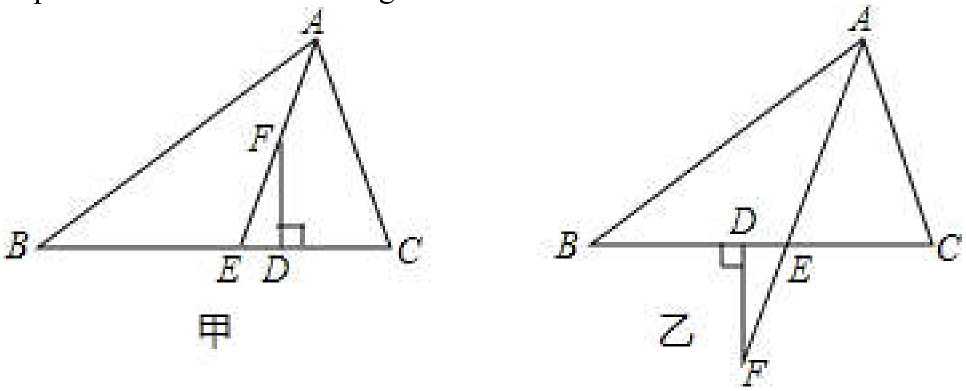


graph: {"substems":[{},{"questionrelies":"1"}],"stem":{"pictures":[{"variable-equals":{},"picturename":"1000001146_Q_1.jpg","collineations":{"2":"E###O###F","1":"B###O###D","3": "B###A###E","4": "F###C###D","5": "A###D","6": "B###C","0":"A###O###C"},"coordinates":{"D":"-0.99,8.27","E":"-7.81,1.51","F":"-0.98,10.20","A":"-7.79,8.29","B":"-7.81,3.44","C":"-1.01,3.41","O":"-4.40,5.85"}}]}}

NLP: PointOnLineRelation{point=O, line=EF, isConstant=false, extension=false},RectangleRelation{rectangle=Rectangle:ABCD},LineCrossRelation [crossPoint=Optional.of(O), iLine1=AC, iLine2=BD],LineCrossRelation [crossPoint=Optional.of(E), iLine1=EF, iLine2=AB],LineCrossRelation [crossPoint=Optional.of(F), iLine1=EF, iLine2=CD],RhombusRelation{rhombus=Rhombus:AECF},Calculation:(ExpressRelation:[key:](EF/AC)),ProveConclusionRelation:[Proof: TriangleCongRelation{triangleA=△BOE,

triangleB=△DOF}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:](EF/AC))},JudgePostionConclusionRelation: [data1=EF, data2=AC]

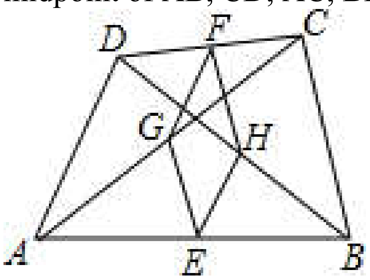
710, topic: is known as A, in the △ABC, AE bisects ∠BAC (∠C＞∠B), F is a point AE, and FD⊥BC in (1) Explain D.: ∠EFD =$ \ frac {1} {2} \ left (\ angle C- \ angle B \ right) $; (2) when at the extended line AE F, as shown in B, with other conditions unchanged, (1) the conclusions also set it? Please explain the reason. #% # <img>



graph:
{"stem":{"pictures":[],"appliedproblems":{}},"substems":[{"substemid":"1","questionrelies":"","pictures":[{"picturename":"1000041236_Q_1.jpg","coordinates":{"A":"-1.06,3.33","B":"-6.54,-0.90","C":"-0.54,-0.90","D":"-2.00,-0.90","E":"-2.82,-0.90","F":"-2.00,1.07"},"collineations":{"0":"A###E###F","1":"C###A","2":"B###A","3":"C###D###E###B","4":"D###F"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},{"substemid":"2","questionrelies":"","pictures":[{"picturename":"1000041236_Q_2.jpg","coordinates":{"A":"-1.06,3.33","B":"-6.54,-0.90","C":"-0.54,-0.90","D":"-3.51,-0.90","E":"-2.82,-0.90","F":"-3.51,-2.54"},"collineations":{"0":"A###E###F","1":"C###A","2":"B###A","3":"C###D###E###B","4":"D###F"},"variable-equals":{},"circles":[]}],"appliedproblems":{}}]}

NLP: InequalityRelation{∠ACD>∠ABE},TriangleRelation:△ABC,AngleBisectorRelation{line=AE,angle=∠BAC, angle1=∠BAE, angle2=∠CAE},PointOnLineRelation{point=F, line=AE, isConstant=false, extension=false},LinePerpRelation{line1=FD, line2=BC, crossPoint=D},PointOnLineRelation{point=F, line=AE, isConstant=false, extension=true},ProveConclusionRelation:[Proof: EqualityRelation{∠DFE=(1/2)*(∠ACD-∠ABE)}]

711, topic: Given: As shown, the quadrilateral ABCD, AD =BC, points E, F, G, H, respectively, is the midpoint of AB, CD, AC, BD Verification of: EGFH quadrilateral is a rhombus #% # <img>

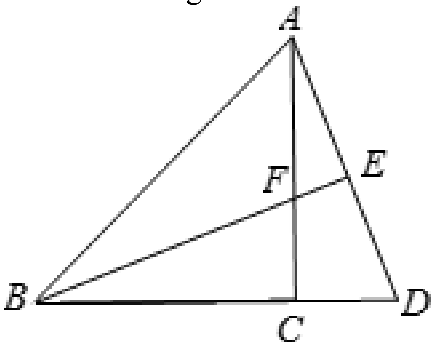


graph:
{"stem":{"pictures":[{"picturename":"1000050576_Q_1.jpg","coordinates":{"A":"-7.00,3.00","B":"-2.00,3.00","C":"-3.12,6.24","D":"-5.44,6.05","E":"-4.50,3.00","F":"-4.28,6.15","G":"-5.06,4.62","H":"-3.72,4.53"},"collineations":{"0":"A###E###B","1":"D###F###C","2":"A###G###C","3":"D###H###B","4":"A###D","5":"B###C","6":"F###H","7":"E###H","8":"F###G","9":"E###G"},"variable-equals":{},"circles":[]}],"appl

iedproblems":{}},"substems":[]}

NLP: Know:QuadrilateralRelation{quadrilateral=ABCD},EqualityRelation{AD=BC},MiddlePointOfSegmentRelation{middlePoint=E,segment=AB},MiddlePointOfSegmentRelation{middlePoint=F,segment=CD},MiddlePointOfSegmentRelation{middlePoint=G,segment=AC},MiddlePointOfSegmentRelation{middlePoint=H,segment=BD},ProveConclusionRelation:[Proof: RhombusRelation{rhombus=Rhombus:EGFH}]

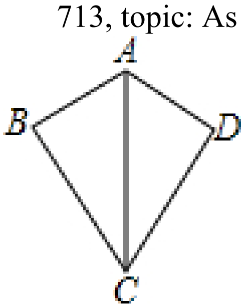
712, topic: FIG., It is known in △ABD, AC⊥BD, BE⊥AD, AC =BC, #% # (1) Prove △BCF≌ △ACD; #% # (2) When bisecting BE ∠ABD , DE =6, #% # ① confirmation: BA =BD #% # ② △ABF seeking area #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000042046_Q_1.jpg","coordinates":{"A":"-4.30,17.54","B":"-9.84,12.00","C":"-4.30,12.00","D":"-2.00,12.00","E":"-3.15,14.77","F":"-4.30,14.30"},"collineations":{"0":"A###E###D","1":"A###B","2":"A###F###C","3":"B###F###E","4":"B###C###D"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleRelation:△ABD,LinePerpRelation{line1=AC, line2=BD, crossPoint=C},LinePerpRelation{line1=BE, line2=AD, crossPoint=E},EqualityRelation{AC=BC},AngleBisectorRelation{line=BE,angle=∠ABC, angle1=∠ABE, angle2=∠CBE},EqualityRelation{DE=6},EqualityRelation{S_△ABF=v_0},Calculation:(ExpressRelation:[key:]v_0),ProveConclusionRelation:[Proof: TriangleCongRelation{triangleA=△BCF, triangleB=△ACD}],ProveConclusionRelation:[Proof: EqualityRelation{AB=BD}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]S_△ABF)}

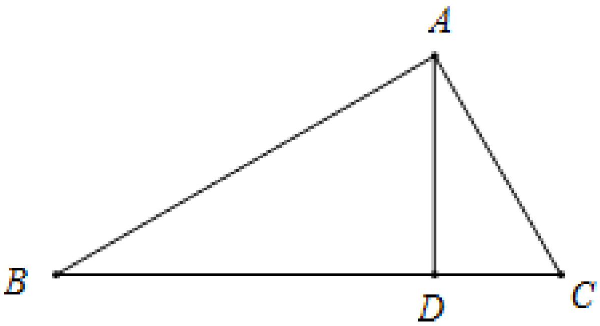
713, topic: As shown, known AB =AD, BC =DC, Proof: ∠DAC =∠BAC #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000035454_Q_1.jpg","coordinates":{"A":"-7.00,7.00","B":"-8.00,6.00","C":"-7.00,4.00","D":"-6.00,6.00"},"collineations":{"0":"B###C","1":"A###B","2":"A###C","3":"A###D","4":"D###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: EqualityRelation{AB=AD},EqualityRelation{BC=CD},ProveConclusionRelation:[Proof: EqualityRelation{∠CAD=∠BAC}]

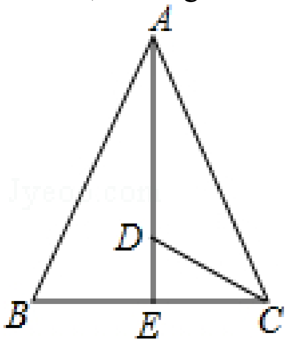
714, topic: FIG, △ABC is known, the high on the side BC is AD, ∠C =2∠B, DC =DE, confirmation: BD =AC + CD #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000040369_Q_1.jpg","coordinates":{"A":"-2.81,2.75","B":"-6.56,0.58","C":"-1.56,0.58","D":"-2.81,0.58","E":"-4.06,0.58"},"collineations":{"0":"A###C","1":"A###D","2":"A###B","3":"C###D###B###E","4":"A###E"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleRelation:△ABC,LinePerpRelation{line1=BC, line2=AD, crossPoint=D},EqualityRelation{∠ACD=2*∠ABE},EqualityRelation{CD=DE},LinePerpRelation{line1=AD, line2=BD, crossPoint=D},ProveConclusionRelation:[Proof: EqualityRelation{BD=AC+CD}]

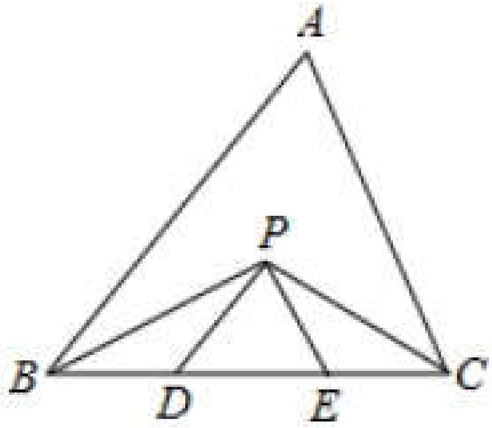
715, topic: FIG, △ABC medium, AB =AC, ∠BAC and ∠ACB bisectors intersect at point D, ∠ADC =130 °, the degree of seeking ∠BAC #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000029253_Q_1.jpg","coordinates":{"A":"1.61,9.13","B":"0.00,0.00","C":"3.22,0.00","D":"1.61,1.35","E":"1.61,0.00"},"collineations":{"0":"A###B","1":"B###C###E","2":"A###C","3":"A###D###E","4":"D###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: AngleBisectorRelation {line =AE, angle =∠BAC, angle1 =∠BAE, angle2 =∠CAE}, AngleBisectorRelation {line =CD, angle =∠ACE, angle1 =∠ACD, angle2 =∠DCE}, TriangleRelation: △ABC , EqualityRelation {AB =AC}, EqualityRelation {∠ADC =(13/18 * Pi)}, find the size of the angle: AngleRelation {angle =∠BAC}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key :] ∠BAC)}

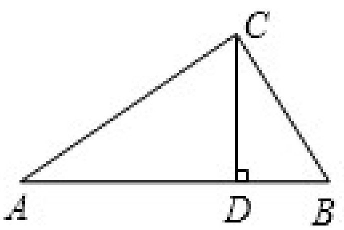
716, topic: As shown in the △ABC, $ BC =5 $ cm, BP, CP and are ∠ABC ∠ACB angle bisector, and PD // AB, PE // AC, find the perimeter of △PDE how many cm? <img>



graph:
[{"circles":[],"variable-equals":{},"picturename":"1000002899_Q_1.jpg","collineations":{"3":"P###C","2":"P###B","1":"A###C","0":"A###B","6":"B###D###E###C","5":"P###E","4":"P###D"},"coordinates":{"D":"-3.20,-2.00","E":"-1.20,-2.03","P":"-1.75,-0.20","A":"-1.01,3.65","B":"-5.50,-1.96","C":"0.71,-2.06"}}]

NLP:
EqualityRelation{C_△DEP=v_0},TriangleRelation:△ABC,EqualityRelation{BC=5},AngleBisectorRelation{line=BP,angle=∠ABD, angle1=∠ABP, angle2=∠DBP},AngleBisectorRelation{line=CP,angle=∠ACE, angle1=∠ACP, angle2=∠ECP},LineParallelRelation [iLine1=PD, iLine2=AB],LineParallelRelation [iLine1=PE, iLine2=AC],Calculation:(ExpressRelation:[key:]v_0),SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]C_△DEP)}

717, topic: FIG., It is known in the $ △ABC $, $ CD⊥AB $ to D, $ AC =20 $, $ BC =15 $, $ DB =9 $, and seek long DC $ △ABC $ circumference.

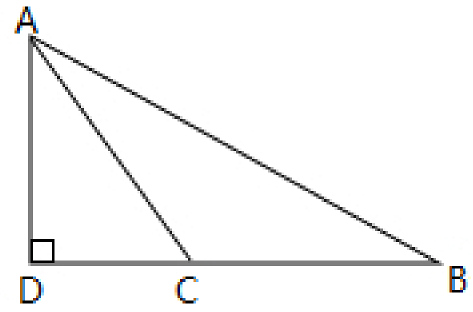


graph:
{"stem":{"pictures":[{"picturename":"1000008622_Q_1.jpg","coordinates":{"A":"0.00,0.00","B":"25.00,0.00","C":"16.00,12.00","D":"16.00,0.00"},"collineations":{"0":"B###C","1":"D###C","2":"A###C","3":"A###D###B"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: EqualityRelation {CD =v_0}, EqualityRelation {C_ △ABC =v_1}, TriangleRelation: △ABC, LinePerpRelation {line1 =CD, line2 =AB, crossPoint =D}, EqualityRelation {AC =20}, EqualityRelation {BC =15 }, EqualityRelation {BD =9}, evaluation (size) :(ExpressRelation: [key:] v_0), evaluation (size) :(ExpressRelation: [key:] v_1), SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] CD)}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] C_ △ABC)}

718, topic: FIG at obtuse triangle ABC, CB =9, AB =17, AC =10, AD⊥BC, Pedal D. The long seek CD

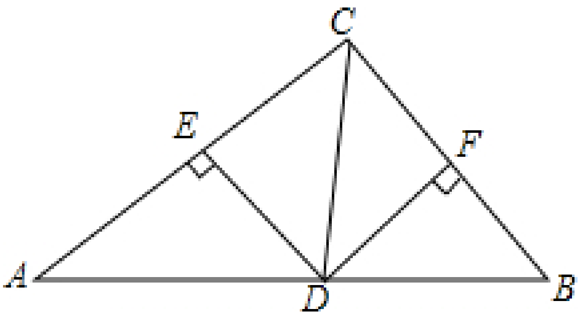
#% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000082911_Q_1.jpg","coordinates":{"A":"-0.50,0.54","B":"3.25,-1.46","C":"1.00,-1.46","D":"-0.50,-1.46"},"collineations":{"0":"D###C###B","1":"A###D","2":"B###A","3":"A###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP:
EqualityRelation{CD=v_0},ObtuseTriangleRelation:ObtuseTriangle:△ABC[Optional.absent()],EqualityRelation{BC=9},EqualityRelation{AB=17},EqualityRelation{AC=10},LinePerpRelation{line1=AD, line2=BC, crossPoint=D},Calculation:(ExpressRelation:[key:]v_0),SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]CD)}

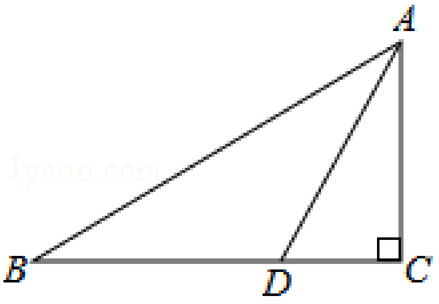
719, topic: (2015 · Guangxi) As in the △ABC, CD AB at point bisecting ∠ACB deposit D, DE⊥AC at point E, DF⊥BC at point F, and BC =4, DE =2, △BCD seeking area. #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000031004_Q_1.jpg","coordinates":{"A":"-14.87,2.03","B":"-8.77,1.87","C":"-11.99,5.00","D":"-11.82,1.95","E":"-13.43,3.52","F":"-10.38,3.44"},"collineations":{"0":"A###D###B","1":"C###E###A","2":"C###F###B","3":"C###D","4":"D###E","5":"D###F"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP:
EqualityRelation{S_△BCD=v_0},TriangleRelation:△ABC,AngleBisectorRelation{line=CD,angle=∠ECF, angle1=∠DCE, angle2=∠DCF},LineCrossRelation [crossPoint=Optional.of(D), iLine1=CD, iLine2=AB],LinePerpRelation{line1=DE, line2=AC, crossPoint=E},LinePerpRelation{line1=DF, line2=BC, crossPoint=F},EqualityRelation{BC=4},EqualityRelation{DE=2},Calculation:(ExpressRelation:[key:]v_0), SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]S_△BCD)}

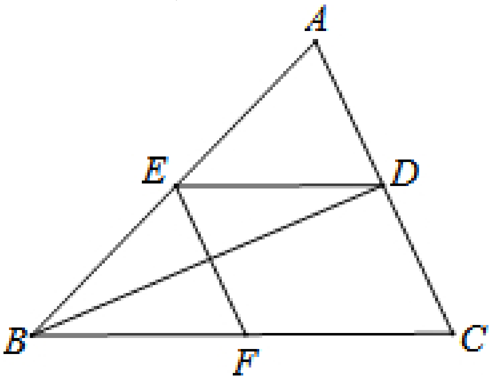
720, topic: (2015 · Dalian) As in the △ABC, ∠C =90 °, AC =2, point D on BC, ∠ADC =2∠B, $ AD =\ sqrt {5} $, BC seeking long. #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000031190_Q_1.jpg","coordinates":{"A":"-8.00,6.00","B":"-11.20,4.00","C":"-8.00,4.00","D":"-8.98,4.00"},"collineations":{"0":"A###D","1":"A###B","2":"A###C","3":"B###D###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: EqualityRelation{BC=v_0},TriangleRelation:△ABC,EqualityRelation{∠ACD=(1/2*Pi)},EqualityRelation{AC=2},PointOnLineRelation{point=D, line=BC, isConstant=false, extension=false},EqualityRelation{∠ADC=2*∠ABD},EqualityRelation{AD=(5^(1/2))},Calculation:(ExpressRelation:[key:]v_0),SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]BC)}

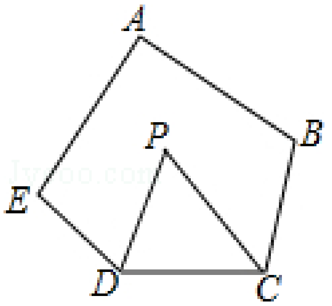
721, topic: Given: As shown, the BD is the bisector of △ABC, points E, F, respectively, in the AB, BC, and ED // BC, EF // AC #% # Proof:. BE =CF #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000081622_Q_1.jpg","coordinates":{"A":"4.00,6.00","B":"2.00,1.00","C":"8.00,1.00","D":"5.89,3.64","E":"3.05,3.64","F":"5.16,1.00"},"collineations":{"0":"A###E###B","1":"B###F###C","2":"A###D###C","3":"B###D","4":"D###E","5":"E###F"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleRelation:△ABC,PointOnLineRelation{point=E, line=AB, isConstant=false, extension=false},PointOnLineRelation{point=F, line=BC, isConstant=false, extension=false},LineParallelRelation [iLine1=ED, iLine2=BC],LineParallelRelation [iLine1=EF, iLine2=AC],AngleBisectorRelation{line=BD,angle=∠EBF, angle1=∠DBE, angle2=∠DBF},ProveConclusionRelation:[Proof: EqualityRelation{BE=CF}]

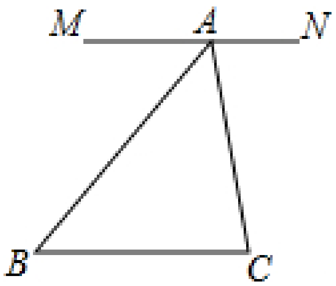
722, topic: As shown in the pentagon ABCDE, ∠A + ∠B + ∠E =300 °, DP, CP are equally ∠EDC, ∠BCD, seeking the degree ∠P #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000031928_Q_1.jpg","coordinates":{"A":"-5.00,9.68","B":"-1.91,8.02","C":"-2.27,5.50","D":"-5.07,5.33","E":"-6.67,6.59","P":"-4.32,7.73"},"collineations":{"0":"B###A","1":"A###E","2":"E###D","3":"D###P","4":"D###C","5":"C###P","6":"C###B"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: PolygonRelation{polygon=ABCDE},EqualityRelation{∠BAE+∠ABC+∠AED=(5/3*Pi)},AngleBisectorRelation{line=DP,angle=∠CDE, angle1=∠CDP, angle2=∠EDP},AngleBisectorRelation{line=CP,angle=∠BCD, angle1=∠BCP, angle2=∠DCP},Calculation:AngleRelation{angle=∠CPD},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]∠CPD)}

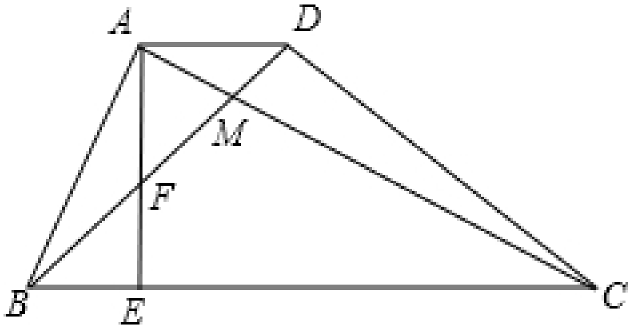
723, topic: FIG point A on the straight line MN, and MN∥BC, Proof: ∠BAC + ∠B + ∠C =180 ° #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000035344_Q_1.jpg","coordinates":{"A":"4.00,4.00","B":"0.00,0.00","C":"5.00,0.00","M":"1.00,4.00","N":"6.00,4.00"},"collineations":{"0":"A###B","1":"A###C","2":"B###C","3":"M###A###N"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: PointOnLineRelation{point=A, line=MN, isConstant=false, extension=false},LineParallelRelation[iLine1=MN, iLine2=BC],ProveConclusionRelation:[Proof: EqualityRelation{∠BAC+∠ABC+∠ACB=(Pi)}]

724, topic: As shown, the quadrilateral ABCD in the AC diagonal, BD intersect at points and M, and AC⊥AB, BD⊥CD, through the point A as AE⊥BC, pedal is E, BD cross at point F. #% # (1) Proof: $ {{AB} ^ {2}} =BF \ cdot BD $ #% # (2) If AB =AD, BE =1, AE =2, find the line segment EF long #. % # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000062211_Q_1.jpg","coordinates":{"A":"-10.00,1.96","B":"-11.01,0.00","C":"-6.22,0.00","D":"-7.80,1.96","E":"-10.00,0.00","F":"-10.00,0.61","M":"-8.81,1.34"},"collineations":{"0":"A###B","1":"C###D","2":"D###A","3":"B###E###C","4":"A###F###E","5":"A###M###C","6":"D###M###F###B"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

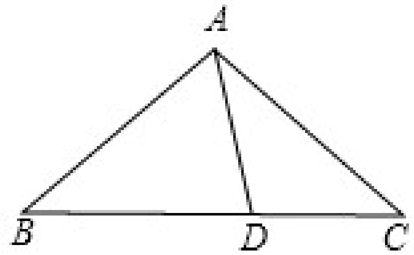
NLP: Know:QuadrilateralRelation{quadrilateral=ABCD},LineCrossRelation [crossPoint=Optional.of(M), iLine1=AC, iLine2=BD],LinePerpRelation{line1=AC, line2=AB, crossPoint=A},LinePerpRelation{line1=BD, line2=CD, crossPoint=D},LinePerpRelation{line1=AE, line2=BC, crossPoint=E},LineCrossRelation [crossPoint=Optional.of(F), iLine1=AE, iLine2=BD],EqualityRelation{EF=v_0},EqualityRelation{AB=AD},EqualityRelation{BE=1},EqualityRelation{AE=2},Calculation:(ExpressRelation:[key:]v_0),ProveConclusionRelation:[Proof: EqualityRelation{((AB)^2)=BF*BD}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]EF)}

725, topic: FIG, $ ∠B =∠ACB $, $ CD⊥AB $ at point D, CE bisecting $ ∠ACB $, if $ ∠DCE =42 ° $, $ ∠BAC $ required degree <img. >

graph:
{"stem":{"pictures":[{"picturename":"1000021712_Q_1.jpg","coordinates":{"A":"1.46,2.03","B":"-1.65,0.00","C":"5.00,0.00","D":"3.02,3.04","E":"0.28,1.26"},"collineations":{"0":"C###D","1":"E###B###D###A","2":"E###C","3":"C###A","4":"B###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: EqualityRelation {∠CBE =∠ACB}, LinePerpRelation {line1 =CD, line2 =AB, crossPoint =D}, AngleBisectorRelation {line =CE, angle =∠ACB, angle1 =∠ACE, angle2 =∠BCE}, EqualityRelation { ∠DCE =(7/30 * Pi)}, find the size of the angle: AngleRelation {angle =∠CAE}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] ∠CAE)}

726, topic: As shown in the $ △ABC $, $ AB =BD =AC $, $ AD =CD $, $ ∠ADB $ seeking degrees <img>.

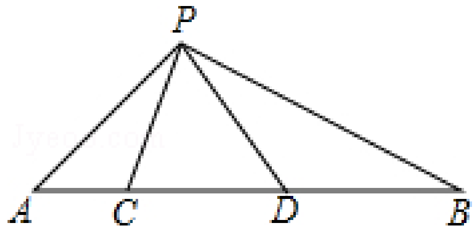


graph:

{"stem":{"pictures":[{"picturename":"1000021357_Q_1.jpg","coordinates":{"A":"-4.35,2.71","B":"-9.21,-0.82","C":"0.50,-0.82","D":"-3.21,-0.82"},"collineations":{"0":"A###B","1":"A###C","2":"A###D","3":"B###D###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleRelation: △ABC, MultiEqualityRelation [multiExpressCompare =AB =BD =AC, originExpressRelationList =[], keyWord =null, result =null], EqualityRelation {AD =CD}, the size of the required angle: AngleRelation {angle =∠ADB} , SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] ∠ADB)}

727, topic: FIG, points C, D on the line segment AB, △PCD equilateral triangle, and △ACP∽ △PDB, seeking the degree ∠APB #% # <img>.

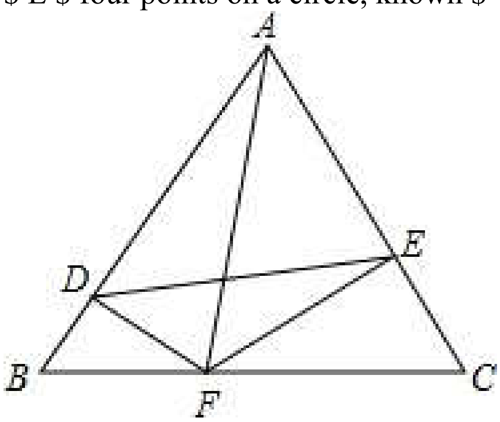


graph:

{"stem":{"pictures":[{"picturename":"1000050806_Q_1.jpg","coordinates":{"A":"-9.00,2.00","B":"-2.00,2.00","C":"-8.00,2.00","D":"-6.00,2.00","P":"-7.00,3.73"},"collineations":{"0":"A###P","1":"P###B","2":"P###C","3":"P###D","4":"A###B###C###D"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: PointOnLineRelation{point=C, line=AB, isConstant=false, extension=false},PointOnLineRelation{point=D, line=AB, isConstant=false, extension=false},RegularTriangleRelation:RegularTriangle:△PCD,TriangleSimilarRelation{triangleA=△ACP, triangleB=△PDB},Calculation:AngleRelation{angle=∠APB},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]∠APB)}

728, topic: $ \ vartriangle ABC $ equilateral triangle with a side length of $ a $, $ DF \ bot AB $, $ EF \ bot AC $ (1) Proof: $ \ vartriangle BDF \ sim \ vartriangle CEF $; #% # (2) when the $ a =4 $, set $ BF =m $, $ quadrilateral area ADFE $ $ S $, $ determined functional relationship between the S $ and $ m $, $ and when the inquiry m S $ $ $ what value takes a maximum value; #% # (3) known $ A $, $ D $, $ F $, $ E $ four points on a circle, known $ \ tan \ angle EDF =\ frac {\ sqrt {3}} {2} $, find this diameter.

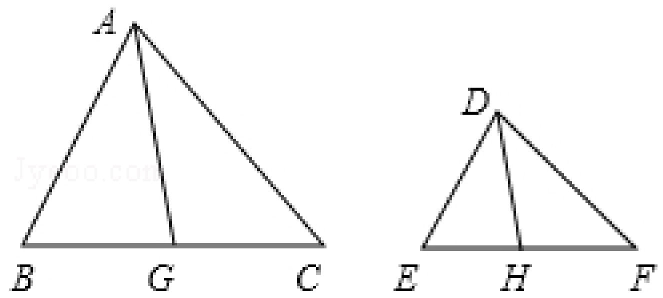


graph:

{"stem":{"pictures":[{"picturename":"1000010405_Q_1.jpg","coordinates":{"A":"2.00,3.46","B":"0.00,0.00","C":"4.00,0.00","D":"0.25,0.43","E":"3.25,1.00","F":"1.00,0.00"},"collineations":{"0":"B###A###D","1":"B###F###C","2":"D###F","3":"D###E","4":"E###F"},"variable-equals":{},"circles":[]}],"appliedproblem s":{}},"substems":[]}

NLP: RegularTriangleRelation: RegularTriangle: △ABC, EqualityRelation {AB =a}, LinePerpRelation {line1 =DF, line2 =AB, crossPoint =D}, LinePerpRelation {line1 =EF, line2 =AC, crossPoint =}, EqualityRelation {a =4 }, EqualityRelation {BF =m}, known conditions QuadrilateralRelation {quadrilateral =ADFE}, EqualityRelation {S_ADFE =S}, the relationship between the expression: DualExpressRelation {expresses =[Express: [S], Express: [m]] }, the evaluator (size) :(ExpressRelation: [key:] m), ExtremumRelation [key =Express: [S], value =null, extremumType =MAX], MultiPointConcyclicRelation {circle =, pointSet =[A, D, F , E]}, EqualityRelation {tan (∠EDF) =(((3 ^ (1/2))) / 2)}, the diameter of the circle: CircleRelation {circle =circle [⊙O_0] {center =O_0, analytic =(x-x_O_0) ^ 2 + (y-y_O_0) ^ 2 =r_O_0 ^ 2}}, ProveConclusionRelation: [Proof: TriangleSimilarRelation {triangleA =△BDF, triangleB =△CEF}], SolutionConclusionRelation {relation =between expression relationship: DualExpressRelation {expresses =[Express: [S], Express: [m]]}}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] M)}, SolutionConclusionRelation {relation =diameter of the circle: CircleRelation {circle =Circle [⊙O_0] {center =O_0, analytic =(x-x_O_0) ^ 2 + (y-y_O_0) ^ 2 =r_O_0 ^ 2}} }

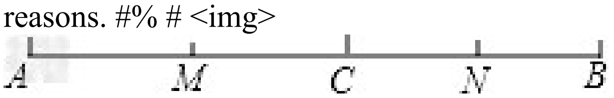
729, topic: As shown in the △ABC and △DEF, G, H, respectively, and EF is the midpoint of the side BC, known AB =2DE, AC =2DF, ∠BAC =∠EDF #% # (1). and the ratio DH line AG is the number? #% # (2) △ABC and △DEF area ratio is the number? #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000050782_Q_1.jpg","coordinates":{"A":"-6.00,5.00","B":"-8.00,2.00","C":"-3.00,2.00","D":"1.00,3.50","E":"0.00,2.00","F":"2.50,2.00","G":"-5.50,2.00","H":"1.25,2.00"},"collineations":{"0":"A###C","1":"A###B","2":"A###G","3":"B###C###G","4":"D###E","5":"D###F","6":"D###H","7":"F###E###H"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP:
TriangleRelation:△ABC,TriangleRelation:△DEF,MiddlePointOfSegmentRelation{middlePoint=G,segment=BC},MiddlePointOfSegmentRelation{middlePoint=H,segment=EF},EqualityRelation{AB=2*DE},EqualityRelation{AC=2*DF},EqualityRelation{∠BAC=∠EDF},Calculation:(ExpressRelation:[key:](AG/DH)),EqualityRelation{S_△ABC=v_0},EqualityRelation{S_△DEF=v_1},Calculation:(ExpressRelation:[key:]v_0/v_1),SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:](AG/DH))},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]v_0/v_1)}

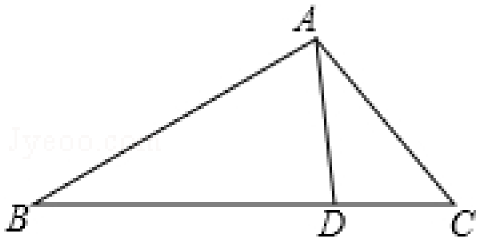
730, topic: As shown, point C on line segment AB, AC =8cm, CB =6cm, points M, N, respectively, is the midpoint of AC, BC% of # # (1) Find the segment length MN;.? ? #% # (2) if C is any point on the line segment AB, meet AC + CB =acm, other things being equal, you can guess the length of it and the reasons MN;?? #% # (3) if C line extension line segment AB, and meet AC-CB =bcm, M, N, respectively midpoint of AC, BC, and you can guess the length of MN do? draw graphics, write your conclusions, and explain reasons. #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000021420_Q_1.jpg","coordinates":{"A":"0.00,0.00","M":"4.00,0.00","C":"8.00,0.00","N":"11.00,0.00","B":"14.00,0.00"},"collineations":{"0":"A###M###C###N###B"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: PointOnLineRelation{point=C, line=AB, isConstant=false, extension=false},EqualityRelation{AC=8},EqualityRelation{BC=6},MiddlePointOfSegmentRelation{middlePoint=M,segment=AC},MiddlePointOfSegmentRelation{middlePoint=N,segment=BC},EqualityRelation{MN=v_0},Calculation:(ExpressRelation:[key:]v_0),EqualityRelation{MN=v_1},PointOnLineRelation{point=C, line=AB, isConstant=false, extension=false},EqualityRelation{AC+BC=a*c*m},Calculation:(ExpressRelation:[key:]v_1),EqualityRelation{MN=v_2},PointOnLineRelation{point=C, line=AB, isConstant=false, extension=false},EqualityRelation{AC-BC=b*c*m},MiddlePointOfSegmentRelation{middlePoint=M,segment=AC},MiddlePointOfSegmentRelation{middlePoint=N,segment=BC},Calculation:(ExpressRelation:[key:]v_2),SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]MN)},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]MN)},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]MN)}

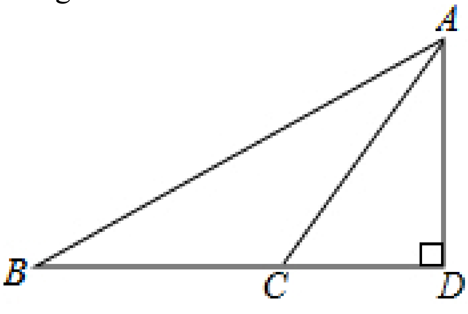
731, topic: FIG, D is on side BC △ABC little is known AB =4, AD =2, ∠DAC =∠B, if the area of △ABD is a, the area required △ACD #% #. <img>



graph:
{"stem":{"pictures":[{"picturename":"1000034956_Q_1.jpg","coordinates":{"A":"-3.51,5.97","B":"-6.93,4.00","C":"-1.51,4.00","D":"-2.98,4.00"},"collineations":{"0":"B###A","1":"A###D","2":"A###C","3":"B###D###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: EqualityRelation{S_△ACD=v_0},TriangleRelation:△ABC,PointOnLineRelation{point=D, line=BC, isConstant=false, extension=false},EqualityRelation{AB=4},EqualityRelation{AD=2},EqualityRelation{∠CAD=∠ABD},EqualityRelation{S_△ABD=a},Calculation:(ExpressRelation:[key:]v_0),SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]S_△ACD)}

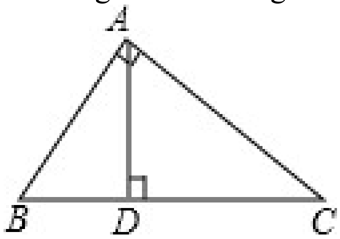
732, topic:. As shown, known CB =9, AB =17, AC =10, AD⊥BC at points D, long seeking AD #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000060863_Q_1.jpg","coordinates":{"A":"15.00,8.00","B":"0.00,0.00","C":"9.00,0.00","D":"15.00,0.00"},"collineations":{"0":"C###A","1":"D###A","2":"B###A","3":"D###C###B"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: EqualityRelation{AD=v_0},EqualityRelation{BC=9},EqualityRelation{AB=17},EqualityRelation{AC=10},LinePerpRelation{line1=AD, line2=BC, crossPoint=D},Calculation:(ExpressRelation:[key:]v_0),SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]AD)}

733, topic: As shown in the △ABC, ∠BAC =90 °, AB =15, AC =20, AD⊥BC, D. Pedal seek to AD, BD length #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000061329_Q_1.jpg","coordinates":{"A":"0.00,12.00","B":"-9.00,0.00","C":"16.00,0.00","D":"0.00,0.00"},"collineations":{"0":"B###D###C","1":"D###A","2":"A###B","3":"A###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleRelation: △ABC, EqualityRelation {∠BAC =(1/2 * Pi)}, EqualityRelation {AB =15}, EqualityRelation {AC =20}, LinePerpRelation {line1 =AD, line2 =BC, crossPoint =D}, evaluation (size) :(ExpressRelation: [key:] AD), evaluation (size) :(ExpressRelation: [key:] BD), SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] AD)}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] BD)}

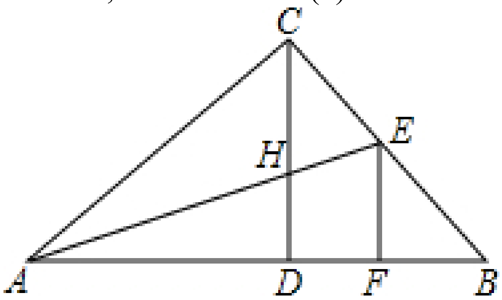
734, topic: FIG known A, B, C is the number of three-axis, point C represents the number of 6, BC =4, AB =12 #% # (1) Write a logarithmic axis points A, B. represents the number;% # # (2) fixed point P, Q, respectively, while starting from a, C, the point P at a rate of 6 per unit length along the axis of the right number of uniform motion, the point Q to 3 units per velocity along the length of the uniform motion axes to the left, M being the midpoint of the AP, the point of the line segment N CQ, and $ CN =\frac {1} {3} CQ $. exercise set time t (t>0) . #% # ① find second logarithmic axis point M, N represents the number (represented by a formula containing t); #% # ② t what value, just as the origin O is the midpoint of a line segment PQ #% # <img>.

graph:
{"stem":{"pictures":[{"picturename":"1000083110_Q_1.jpg","coordinates":{"A":"-6.48,1.35","B":"-0.48,1.32","C":"1.52,1.31","O":"-1.48,1.33"},"collineations":{"0":"A###O###B###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: PointOnLineRelation{point=A, line=StraightLine[X] analytic :y=0 slope:0 b:0 isLinearFunction:false, isConstant=false, extension=false},PointOnLineRelation{point=B, line=StraightLine[X] analytic :y=0 slope:0 b:0 isLinearFunction:false, isConstant=false, extension=false},PointOnLineRelation{point=C, line=StraightLine[X] analytic :y=0 slope:0 b:0

isLinearFunction:false, isConstant=false, extension=false},PointRelation:C(6,0),EqualityRelation{BC=4},EqualityRelation{AB=12},KnowledgePointWordRelation{knowledgeWord=KNOWLEDGE_WORD{knowledgeDesc='数轴', knowledgeId='110200'}},InequalityRelation{t>0},MiddlePointOfSegmentRelation{middlePoint=M,segment=AP},PointOnLineRelation{point=N, line=CQ, isConstant=false, extension=false},EqualityRelation{CN=(1/3)*CQ},MiddlePointOfSegmentRelation{middlePoint=O,segment=PQ},PointCoincidenceRelation{point1=O, point2=W_9(0,0)},Calculation:(ExpressRelation:[key:]t),SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]t)}

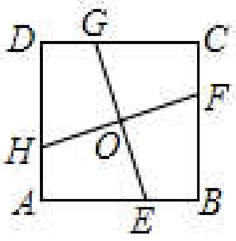
735, topic: Rt △ABC in the, ∠ACB =90 °, CD high edge AB, AE cross angle bisector CD to H, EF⊥AB in F, Proof: #% # (1) ∠ACD =∠B;. #% # (2) CH =EF #% # <img>



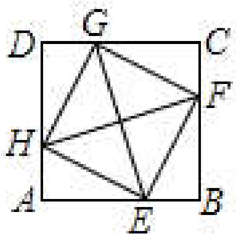
graph:
{"stem":{"pictures":[{"picturename":"1000041261_Q_1.jpg","coordinates":{"A":"-4.02,-0.13","B":"4.25,-0.13","C":"-0.13,4.00","D":"-0.13,-0.13","E":"1.65,2.32","F":"1.65,-0.13","H":"-0.13,1.55"},"collineations":{"0":"A###F###D###B","1":"A###C","2":"A###E###H","3":"D###H###C","4":"F###E","5":"E###C###B"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: RightTriangleRelation:RightTriangle:△ABC[Optional.of(C)],EqualityRelation{∠ACE=(1/2*Pi)},LinePerpRelation{line1=CD, line2=AB, crossPoint=D},LineCrossRelation [crossPoint=Optional.of(H), iLine1=AE, iLine2=CD],LinePerpRelation{line1=EF, line2=AB, crossPoint=F},LinePerpRelation{line1=CD, line2=AD, crossPoint=D},AngleBisectorRelation{line=AE,angle=∠CAD, angle1=∠CAE, angle2=∠DAE},ProveConclusionRelation:[Proof: EqualityRelation{∠ACH=∠EBF}],ProveConclusionRelation:[Proof: EqualityRelation{CH=EF}]

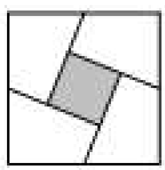
736, topic: FIG ① , in the square ABCD, E, F, G, H are AB, BC, CD, points on the DA, HA =EB =FC =GD, connected EG, FH, the intersection is O. % # # (1) in FIG. ② , connected EF, FG, GH, HE, again determined quadrilateral EFGH shape, and prove your conclusion;% # # (2) the square ABCD along line EG, HF cut, then the splicing four quadrilateral in Figure ③ way to get into a quadrangle, a side if square ABCD is 3cm, HA =EB =FC =DG =1cm, the shaded area of FIG ③ is _____ $ {{cm } ^ {2}} $. #% # <img>



图①



图②



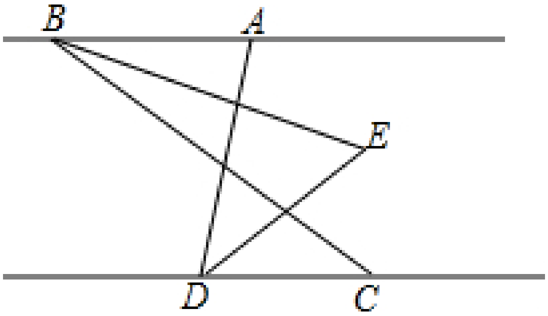
图③

graph:

{"stem":{"pictures":[],"appliedproblems":{}},"substems":[{"substemid":"1","questionrelies":"","pictures":[{"picturename":"1000041044_Q_1.jpg","coordinates":{"A":"0.00,0.00","B":"3.00,0.00","C":"3.00,3.00","D":"0.00,3.00","E":"2.00,0.00","F":"3.00,2.00","G":"1.00,3.00","H":"0.00,1.00","O":"1.50,1.50"},"collineations":{"0":"A###E###B","1":"B###F###C","2":"C###G###D","3":"D###H###A","4":"G###O###E","5":"F###O###H"},"variable-equals":{},"circles":[]}],"appliedproblems":{}}]}

NLP: SquareRelation{square=Square:ABCD},PointOnLineRelation{point=E, line=AB, isConstant=false, extension=false},PointOnLineRelation{point=F, line=BC, isConstant=false, extension=false},PointOnLineRelation{point=G, line=CD, isConstant=false, extension=false},PointOnLineRelation{point=H, line=DA, isConstant=false, extension=false},MultiEqualityRelation [multiExpressCompare=AH=BE=CF=DG, originExpressRelationList=[], keyWord=null, result=null],SegmentRelation:EG,SegmentRelation:FH,MultiPointCollinearRelation:[E, F],MultiPointCollinearRelation:[F, G],MultiPointCollinearRelation:[G, H],MultiPointCollinearRelation:[H, E],SegmentRelation:HF,SquareRelation{square=Square:ABCD},EqualityRelation{AB=3},MultiEqualityRelation [multiExpressCompare=AH=BE=CF=DG=1, originExpressRelationList=[], keyWord=null, result=null],ShapeJudgeConclusionRelation{geoEle=EFGH}

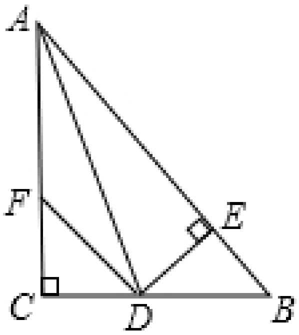
737, topic: FIG known AB // CD, BE equally ∠ABC, DE equally ∠ADC, ∠BAD =80 °, Determine: #% # (1) ∠EDC degree;% # # (2) if ∠BCD =n °, ∠BED Determine degree (represented by the formula with n). #% # <img>



graph: {"stem":{"pictures":[{"picturename":"1000060050_Q_1.jpg","coordinates":{"A":"5.00,5.00","B":"1.00,5.00","C":"7.00,0.00","D":"4.12,0.00","E":"7.34,2.70"},"collineations":{"0":"B###A","1":"A###D","2":"B###E","3":"B###C","4":"D###C","5":"D###E"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: LineParallelRelation [iLine1 =AB, iLine2 =CD], AngleBisectorRelation {line =BE, angle =∠ABC, angle1 =∠ABE, angle2 =∠CBE}, AngleBisectorRelation {line =DE, angle =∠ADC, angle1 =∠ADE , angle2 =∠CDE}, EqualityRelation {∠BAD =(4/9 * Pi)}, the size of the required angle: AngleRelation {angle =∠CDE}, the size of the required angle: AngleRelation {angle =∠BED}, SolutionConclusionRelation {relation =evaluation (size) :(ExpressRelation: [key:] ∠CDE)}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] ∠BED)}

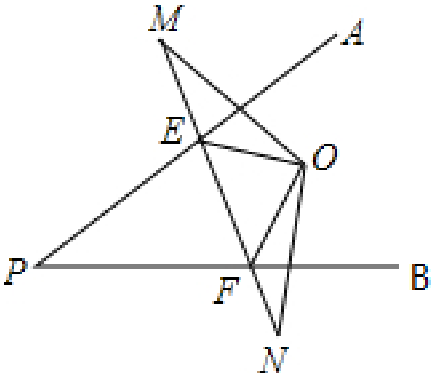
738, topic: As shown in the △ABC, ∠C =90 °, AD is ∠BAC bisector, DE⊥AB at point E, point F on the AC, BD =DF confirmation: #% # (1) CF =EB;. #% # (2) AB =AF + 2EB #% # <img>



graph: {"stem":{"pictures":[{"picturename":"1000038045_Q_1.jpg","coordinates":{"A":"0.00,4.00","B":"5.00,-1.00","C":"0.00,-1.00","D":"2.07,-1.00","E":"3.54,0.46","F":"0.00,1.07"},"collineations":{"0":"A###F###C","1":"A###D","2":"A###E###B","3":"B###D###C","4":"D###F","5":"D###E"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleRelation:△ABC,EqualityRelation{∠DCF=(1/2*Pi)},AngleBisectorRelation{line=AD,angle=∠EAF, angle1=∠DAE, angle2=∠DAF},LinePerpRelation{line1=DE, line2=AB, crossPoint=E},PointOnLineRelation{point=F, line=AC, isConstant=false, extension=false},EqualityRelation{BD=DF},ProveConclusionRelation:[Proof: EqualityRelation{CF=BE}],ProveConclusionRelation:[Proof: EqualityRelation{AB=AF+2*BE}]

739, topic: as shown, it is known that O, M in ∠APB, N are the points O on PA, PB point of symmetry, connected to MN, and PA, PB, respectively, intersect at points E, F, has . know MN =5cm #% # (1) find the circumference of △OEF;% # # (2) connected to PM, PN, △PMN determined shape, and the reasons; #% # (3) if ∠APB =α seeking ∠MPN (denoted by the algebraic containing α). #% # <img>

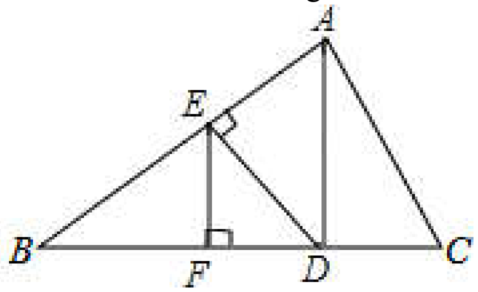


graph: {"stem":{"pictures":[{"picturename":"1000072738_Q_1.jpg","coordinates":{"A":"-9.16,7.52","B":"-8.00,4.00","E":"-10.59,5.75","F":"-9.79,4.00","M":"-11.21,7.11","N":"-9.13,2.57","O":"-9.13,5.43","P":"-12.00,4.00"},"collineations":{"0":"O###E","1":"O###F","2":"O###N","3":"O###M","4":"A###E###P","5":"P###F###B","6":"M###E###F###N"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: SymmetricRelation{preData=M,afterData=O,symmetric=StraightLine[AP] analytic :y=k_PA*x+b_PA slope:null b:null isLinearFunction:false, pivot=},SymmetricRelation{preData=N,afterData=O,symmetric=StraightLine[BP] analytic :y=k_PB*x+b_PB slope:null b:null isLinearFunction:false, pivot=},SegmentRelation:MN,LineCrossRelation [crossPoint=Optional.of(E), iLine1=MN, iLine2=PA],LineCrossRelation [crossPoint=Optional.of(F), iLine1=MN, iLine2=PB],EqualityRelation{MN=5},EqualityRelation{C_△EFO=v_0},Calculation:(ExpressRelation:[key:]v_0),SegmentRelation:PM,SegmentRelation:PN,(ExpressRelation:[key:]α),EqualityRelation{∠EPF=α},Calculation:AngleRelation{angle=∠

MPN},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]C_△EFO)},SolveGeoShapeConclusionRelation{iPolygon=△PMN, iPolygonType=SOLVEENCLOSESHAPE},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]∠MPN)}

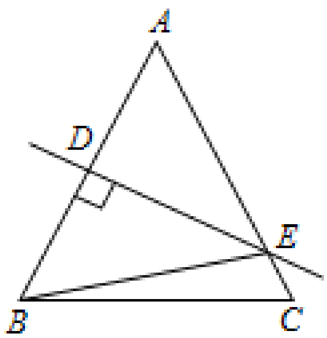
740, topic: FIG, EF⊥BC, DE⊥AB, ∠B =∠ADE =30 ° #% # (1) with "angles in a triangle equals 180 °" the number of degrees of ∠FED;% # # (2.) Prove:. AD // EF #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000038018_Q_1.jpg","coordinates":{"A":"-11.00,3.00","B":"-14.50,0.98","C":"-9.83,0.98","D":"-11.03,0.98","E":"-11.91,2.47","F":"-11.91,0.98"},"collineations":{"0":"A###E###B","1":"B###F###D###C","2":"A###D","3":"E###F","4":"A###C","5":"E###D"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: LinePerpRelation {line1 =EF, line2 =BC, crossPoint =F}, LinePerpRelation {line1 =DE, line2 =AB, crossPoint =E}, MultiEqualityRelation [multiExpressCompare =∠EBF =∠ADE =(1/6 * Pi), originExpressRelationList =[], keyWord =null, result =null], find the size of the angle: AngleRelation {angle =∠DEF}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] ∠DEF)}, ProveConclusionRelation : [Proof: LineParallelRelation [iLine1 =AD, iLine2 =EF]]

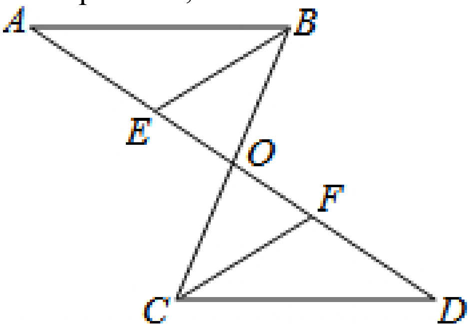
741, topic: As shown in the △ABC, AB =AC, D is the midpoint of AB, DE⊥AB, pedal is D, △BCE known perimeter is 8, and the AC-BC =2, seek AB, BC long. #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000063508_Q_1.jpg","coordinates":{"A":"1.50,4.77","B":"0.00,0.00","C":"3.00,0.00","D":"0.75,2.38","E":"2.41,1.86"},"collineations":{"0":"A###D###B","1":"A###E###C","2":"D###E","3":"C###B","4":"B###E"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleRelation: △ABC, EqualityRelation {AB =AC}, MiddlePointOfSegmentRelation {middlePoint =D, segment =AB}, LinePerpRelation {line1 =DE, line2 =AB, crossPoint =D}, EqualityRelation {C_ △BCE =8}, EqualityRelation {AC-BC =2}, evaluation (size) :(ExpressRelation: [key:] AB), evaluation (size) :(ExpressRelation: [key:] BC), SolutionConclusionRelation {relation =evaluator (size): (ExpressRelation: [key:] AB)}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] BC)}

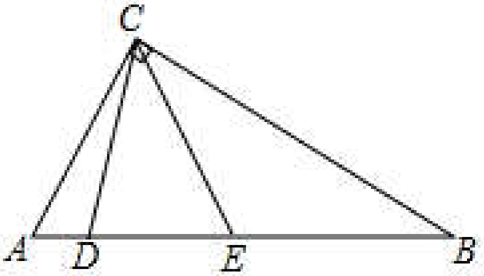
742, topic: Given: FIG, AB // CD, AB =CD, AD, BC intersect at point O, BE // CF, BE, CF in AD are cross-points E, F Proof: .. BE =CF #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000061428_Q_1.jpg","coordinates":{"A":"5.00,10.00","B":"9.00,10.00","C":"7.00,5.00","D":"11.00,5.00","E":"6.77,8.52","F":"9.23,6.48","O":"8.00,7.50"},"collineations":{"0":"A###B","1":"B###O###C","2":"C###D","3":"D###F###O###E###A","4":"C###F","5":"B###E"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: LineParallelRelation [iLine1=AB, iLine2=CD],EqualityRelation{AB=CD},LineCrossRelation [crossPoint=Optional.of(O), iLine1=AD, iLine2=BC],LineParallelRelation [iLine1=BE, iLine2=CF],LineCrossRelation [crossPoint=Optional.of(E), iLine1=BE, iLine2=AD],LineCrossRelation [crossPoint=Optional.of(F), iLine1=CF, iLine2=AD],ProveConclusionRelation:[Proof: EqualityRelation{BE=CF}]

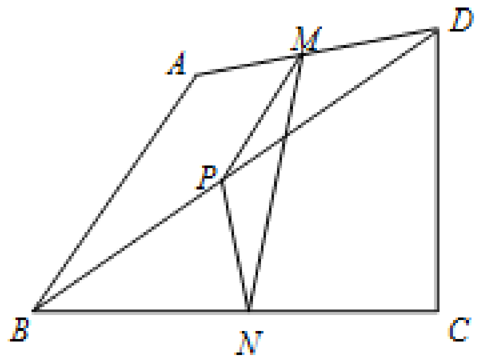
743, topic: As shown in the $ Rt \triangle ABC $, D, E two points on the hypotenuse AB, and $ BD =BC $, $ AE =AC $, $ \angle DCE $ required degree.



graph:
{"stem":{"pictures":[{"picturename":"1000022489_Q_1.jpg","coordinates":{"A":"-3.00,0.00","B":"5.33,0.00","C":"0.00,4.00","D":"1.33,0.00","E":"2.00,0.00"},"collineations":{"0":"A###B###D###E","1":"A###C","2":"D###C","3":"C###E","4":"C###B"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: RightTriangleRelation:RightTriangle:△ABC[Optional.of(C)],PointOnLineRelation{point=D, line=AB, isConstant=false, extension=false},PointOnLineRelation{point=E, line=AB, isConstant=false, extension=false},EqualityRelation{BD=BC},EqualityRelation{AE=AC},Calculation:AngleRelation{angle=∠DCE},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]∠DCE)}

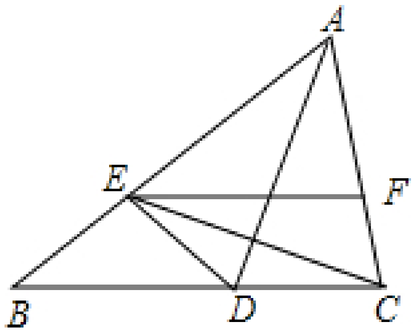
744, topic: As shown, the quadrilateral ABCD, AB =CD, M, N, P are AD, BC, BD, #% # midpoint Proof:. ∠PNM =∠PMN #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000040183_Q_1.jpg","coordinates":{"A":"-2.02,4.87","B":"-4.02,1.40","C":"1.98,1.40","D":"1.98,5.40","P":"-1.02,3.40","M":"-0.02,5.13","N":"-1.02,1.40"},"collineations":{"0":"A###B","1":"A###M###D","2":"B###P###D","3":"B###N###C","4":"P###N","5":"M###N","6":"C###D","7":"M###P"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP:
Know:QuadrilateralRelation{quadrilateral=ABCD},EqualityRelation{AB=CD},MiddlePointOfSegmentRelation{middlePoint=M,segment=AD},MiddlePointOfSegmentRelation{middlePoint=N,segment=BC},MiddlePointOfSegmentRelation{middlePoint=P,segment=BD},ProveConclusionRelation:[Proof: EqualityRelation{∠MNP=∠NMP}]

745, topic: Given: As shown, the AD is the bisector of △ABC, the point E on AB, and AE =AC, coupling ED #% # (1) Prove:. △AED≌ △ACD; #% # (2) to point F on the AC point link EF, EC. If the EC bisects ∠DEF, ∠AED test described how the number satisfying the relationship ∠EFC. #% # <img>

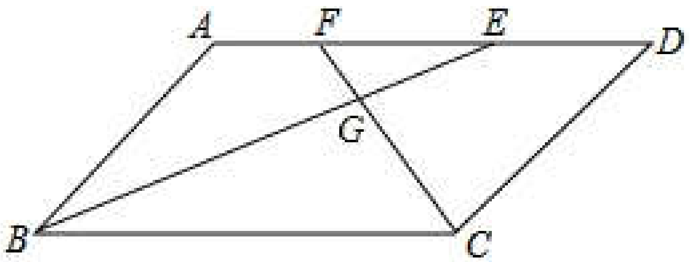


graph:
{"stem":{"pictures":[{"picturename":"1000037592_Q_1.jpg","coordinates":{"A":"-6.80,6.54","B":"-9.95,4.02","C":"-6.35,4.02","D":"-7.75,4.02","E":"-8.81,4.93"},"collineations":{"0":"A###E###B","1":"A###D","2":"E###D","3":"A###C","4":"B###D###C","5":"C###E"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[{"substemid":"2","questionrelies":"","pictures":[{"picturename":"1000037592_Q_1.jpg","coordinates":{"F":"-6.51,4.94"},"collineations":{"0":"A###F###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}}]}

NLP: TriangleRelation:△ABC,PointOnLineRelation{point=E, line=AB, isConstant=false, extension=false},EqualityRelation{AE=AC},SegmentRelation:ED,AngleBisectorRelation{line=AD,angle=∠CAE, angle1=∠CAD, angle2=∠DAE},PointOnLineRelation{point=F, line=AC, isConstant=false, extension=false},SegmentRelation:EF,SegmentRelation:EC,AngleBisectorRelation{line=EC,angle=∠DEF, angle1=∠CED, angle2=∠CEF},JudgeTwoAnglesConnectRelation{ [∠AED,∠CFE]},ProveConclusionRelation:[Proof: TriangleCongRelation{triangleA=△AED, triangleB=△ACD}],ProveConclusionRelation:[Proof: JudgeTwoAnglesConnectRelation{ [∠AED,∠

CFE]}]

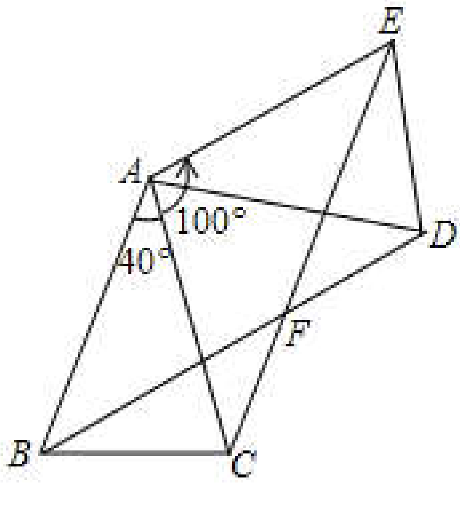
746, topic: is known, as shown in the parallelogram ABCD, the angle bisector cross ∠ABC AD at point E, ∠BCD cross angle bisector AD at point F., Cross AF =DE BE confirmation at point G. . #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000080059_Q_1.jpg","coordinates":{"A":"0.00,1.77","B":"-1.75,0.00","C":"1.96,0.00","D":"3.70,1.77","E":"2.05,1.77","F":"1.30,1.77","G":"1.44,1.38"},"collineations":{"0":"A###F###E###D","1":"F###G###C","2":"B###G###E","3":"A###B","4":"B###C","5":"C###D"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: AngleBisectorRelation{line=BG,angle=∠ABC, angle1=∠ABG, angle2=∠CBG},AngleBisectorRelation{line=CG,angle=∠BCD, angle1=∠BCG, angle2=∠DCG},ParallelogramRelation{parallelogram=Parallelogram:ABCD},ProveConclusionRelation:[Proof: EqualityRelation{AF=DE}]

747, topic: FIG, in △ABC, AB =AC, ∠BAC =40 °, △ABC counterclockwise rotation of the 100 ° around the point A, to give △ADE, connected BD, CE at point F #%. # (1) the required degree ∠ACE;% # # (2) Proof: ABFE quadrilateral is a rhombus #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000034740_Q_1.jpg","coordinates":{"A":"3.00,4.00","B":"1.00,0.00","C":"4.04,-0.35","D":"7.29,2.72","E":"7.10,5.78","F":"5.10,1.78"},"collineations":{"0":"A###B","1":"A###C","2":"B###C","3":"A###E","4":"E###D","5":"A###D","6":"C###F###E","7":"B###F###D"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

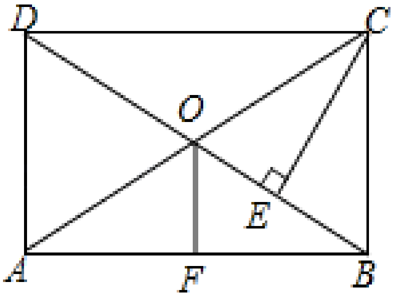
NLP: TriangleRelation:△ABC,EqualityRelation{AB=AC},EqualityRelation{∠BAC=(2/9*Pi)},RotateRelation{preData=△ABC, afterData=△ADE, rotatePoint=A, rotateDegree='5/9*Pi', rotateDirection=ANTICLOCKWISE},LineCrossRelation [crossPoint=Optional.of(F), iLine1=BD, iLine2=CE],Calculation:AngleRelation{angle=∠ACF},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]∠ACF)},ProveConclusionRelation:[Proof: RhombusRelation{rhombus=Rhombus:ABFE}]

748, topic: FIG, AB∥CD, points E, F, respectively, in the AB, CD, connected EF, ∠AEF, ∠CFE bisector at point G, ∠BEF, ∠DFE bisector at point H . #% # (1) Proof: EGFH quadrilateral is a rectangle;% # # (2) after completing proof Bob (1) is continued for a G explored MN∥EF, respectively, cross-AB, CD at point M,. N, through H for PQ∥EF, respectively, cross-AB, CD at point P, Q, to give a quadrangular MNQP. at this time, suppose he MNQP rhombic quadrilateral, in the following diagram you complement proved his ideas. #% # <img><img>

graph:
{"stem":{"pictures":[{"picturename":"1000061894_Q_1.jpg","coordinates":{"A":"8.00,9.00","B":"15.00,9.00","C":"5.00,5.00","D":"12.00,5.00","E":"11.50,9.00","F":"8.50,5.00","G":"7.50,7.00","H":"12.5,7.00","M":"9.00,9.00","N":"6.00,5.00","P":"14.00,9.00","Q":"11.00,5.00"},"collineations":{"0":"A###M###E###P###B","1":"P###H###Q","2":"D###Q###F###N###C","3":"N###G###M","4":"E###H","5":"H###F","6":"F###G","7":"G###E","8":"E###F"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: AngleBisectorRelation{line=EG,angle=∠FEM, angle1=∠FEG, angle2=∠GEM},AngleBisectorRelation{line=FG,angle=∠EFN, angle1=∠EFG, angle2=∠GFN},AngleBisectorRelation{line=EH,angle=∠FEP, angle1=∠FEH, angle2=∠HEP},AngleBisectorRelation{line=FH,angle=∠EFQ, angle1=∠EFH, angle2=∠HFQ},LineParallelRelation [iLine1=AB, iLine2=CD],PointOnLineRelation{point=E, line=AB, isConstant=false, extension=false},PointOnLineRelation{point=F, line=CD, isConstant=false, extension=false},SegmentRelation:EF,SegmentRelation:N_1M_2,LineCrossRelation [crossPoint=Optional.of(H), iLine1=N_6M_7, iLine2=N_8M_9],LineParallelRelation [iLine1=MN, iLine2=EF],PointOnLineRelation{point=G, line=MN, isConstant=false, extension=false},LineCrossRelation [crossPoint=Optional.of(M), iLine1=MN, iLine2=AB],LineCrossRelation [crossPoint=Optional.of(N), iLine1=MN, iLine2=CD],LineParallelRelation [iLine1=PQ, iLine2=EF],PointOnLineRelation{point=H, line=PQ, isConstant=false, extension=false},LineCrossRelation [crossPoint=Optional.of(P), iLine1=PQ, iLine2=AB],LineCrossRelation [crossPoint=Optional.of(Q), iLine1=PQ, iLine2=CD],Know:QuadrilateralRelation{quadrilateral=MNQP},ProveConclusionRelation:[Proof: RectangleRelation{rectangle=Rectangle:EGFH}]

749, topic: As shown, the rectangle ABCD, the diagonal AC, the BD intersect at point O, CE⊥BD in E, OF⊥AB in F, DE: BE =3: 1, OF =2cm, seeking AC long. #% # <img>

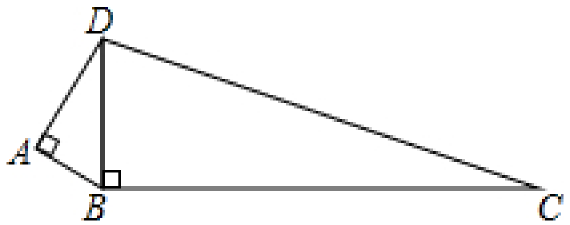


graph:
{"stem":{"pictures":[{"picturename":"1000061884_Q_1.jpg","coordinates":{"A":"2.07,4.00","B":"9.00,4.00","C":"9.00,8.00","D":"2.07,8.00","E":"7.27,5.00","F":"5.54,4.00","O":"5.54,6.00"},"collineations":{"0":"A

###F###B","1":"B###C","2":"C###D","3":"D###A","4":"A###O###C","5":"B###E###O###D","6":"C###E","7":"O###F"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: EqualityRelation{AC=v_0},RectangleRelation{rectangle=Rectangle:ABCD},LineCrossRelation[crossPoint=Optional.of(O), iLine1=AC, iLine2=BD],LinePerpRelation{line1=CE, line2=BD, crossPoint=E},LinePerpRelation{line1=OF, line2=AB, crossPoint=F},EqualityRelation{(DE)/(BE)=(3)/(1)},EqualityRelation{FO=2},Calculation:(ExpressRelation:[key:]v_0),SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]AC)}

750, topic: As shown, the quadrilateral ABCD, ∠BAD =90 °, ∠DBC =90 °, AD =3, AB =4, BC =12 #% # (1) find the length CD #% #. (2) Determine the area of the quadrilateral ABCD. #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000070781_Q_1.jpg","coordinates":{"A":"-1.20,1.60","B":"0.00,0.00","C":"6.00,0.00","D":"0.00,2.50"},"collineations":{"0":"D###A","1":"C###B","2":"C###D","3":"A###B","4":"D###B"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: known conditions QuadrilateralRelation {quadrilateral =ABCD}, EqualityRelation {∠BAD =(1/2 * Pi)}, EqualityRelation {∠CBD =(1/2 * Pi)}, EqualityRelation {AD =3}, EqualityRelation {AB =4}, EqualityRelation {BC =12}, EqualityRelation {CD =v_0}, evaluation (size) :(ExpressRelation: [key:] v_0), known conditions QuadrilateralRelation {quadrilateral =ABCD}, EqualityRelation {S_ABCD =v_1} , find the value (size) :(ExpressRelation: [key:] v_1), SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] CD)}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation : [key:] S_ABCD)}

751, topic: (1) in FIG. 1, the △ABC, ∠ABC bisector BF and CF ∠ACB bisectors intersect at F, through the point F as DE∥BC, cross line AB at points D, cross linear AC at point E, Proof: BD + CE =DE; #% # (2) in FIG. 2, △ABC exterior angle bisector BF, CF intersect at F, through the point F as DE∥BC, cross line AB at point D cross linear AC at point E, then what is the relationship between BD, CE, DE? #% # (3) in FIG. 3, ∠ABC bisector BF and CF ∠ACB exterior angle bisectors intersect at F., crosspoint F for DE∥BC, cross the line AB at point D, cross straight line AC at point E, then what is the relationship between the BD, CE, DE? according to (1), (2) write your guess and prove your Conclusion. #% # <img>

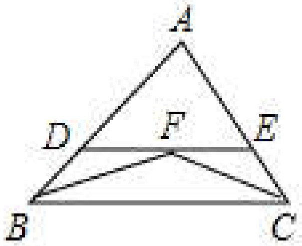


图1

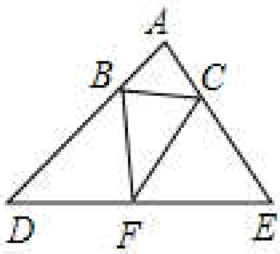


图2

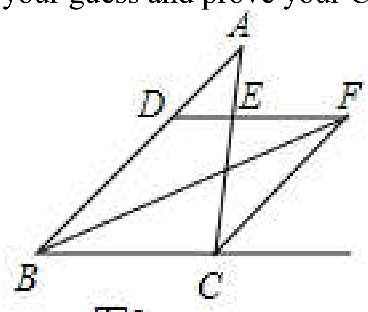


图3

graph:

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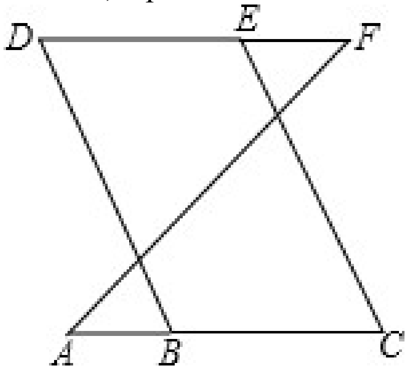
NLP: AngleBisectorRelation{line=BF,angle=∠CBD, angle1=∠CBF, angle2=∠DBF},AngleBisectorRelation{line=CF,angle=∠BCE, angle1=∠BCF, angle2=∠ECF},(ExpressRelation:[key:]1),TriangleRelation:△ABC,LineCrossRelation [crossPoint=Optional.of(F), iLine1=BF, iLine2=CF],LineParallelRelation [iLine1=DE, iLine2=BC],PointOnLineRelation{point=F, line=DE, isConstant=false, extension=false},LineCrossRelation [crossPoint=Optional.of(D), iLine1=DE, iLine2=AB],LineCrossRelation [crossPoint=Optional.of(E), iLine1=DE, iLine2=AC],(ExpressRelation:[key:]2),TriangleRelation:△ABC,LineCrossRelation [crossPoint=Optional.of(F), iLine1=BF, iLine2=CF],LineParallelRelation [iLine1=DE, iLine2=BC],PointOnLineRelation{point=F, line=DE, isConstant=false, extension=false},LineCrossRelation [crossPoint=Optional.of(D), iLine1=DE, iLine2=AB],LineCrossRelation [crossPoint=Optional.of(E), iLine1=DE, iLine2=AC],Calculation:(ExpressRelation:[key:](BD/CE)),Calculation:(ExpressRelation:[key:](CE/DE)),AngleBisectorRelation{line=BF,angle=∠CBD, angle1=∠CBF, angle2=∠DBF},AngleBisectorRelation{line=CF,angle=∠BCE, angle1=∠ECF, angle2=∠BCF},AngleBisectorRelation{line=BF,angle=∠CBD, angle1=∠CBF, angle2=∠DBF},AngleBisectorRelation{line=CF,angle=∠BCE, angle1=∠BCF, angle2=∠ECF},(ExpressRelation:[key:]3),LineCrossRelation [crossPoint=Optional.of(F), iLine1=BF, iLine2=CF],LineParallelRelation [iLine1=DE, iLine2=BC],PointOnLineRelation{point=F, line=DE, isConstant=false, extension=false},LineCrossRelation [crossPoint=Optional.of(D), iLine1=DE, iLine2=AB],LineCrossRelation [crossPoint=Optional.of(E), iLine1=DE, iLine2=AC],Calculation:(ExpressRelation:[key:](BD/CE)),Calculation:(ExpressRelation:[key:](CE/DE)),AngleBisectorRelation{line=CF,angle=∠BCE, angle1=∠ECF, angle2=∠BCF},ProveConclusionRelation:[Proof: EqualityRelation{BD+CE=DE}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:](BD/CE))},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:](CE/DE))},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:](BD/CE))},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:](CE/DE))}

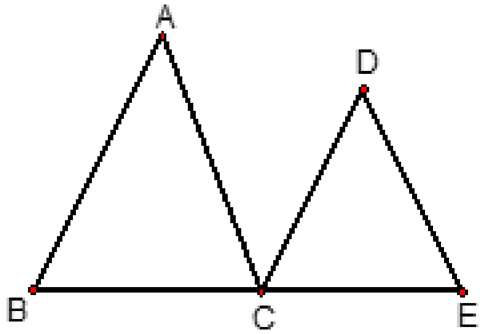
752, topic: FIG known $ \angle A =\angle F $, $ \angle C =\angle D $, Proof: $ BD // CE $.



graph:
{"stem":{"pictures":[{"picturename":"1000021318_Q_1.jpg","coordinates":{"A":"0.00,0.00","B":"2.00,0.00","C":"6.20,0.00","D":"0.00,5.00","E":"4.20,5.00","F":"6.00,5.00"},"collineations":{"0":"D###E###F","1":"F###A","2":"D###B","3":"E###C","4":"A###B###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: EqualityRelation{∠BAF=∠AFE},EqualityRelation{∠BCE=∠BDE},ProveConclusionRelation:[Proof: LineParallelRelation [iLine1=BD, iLine2=CE]]

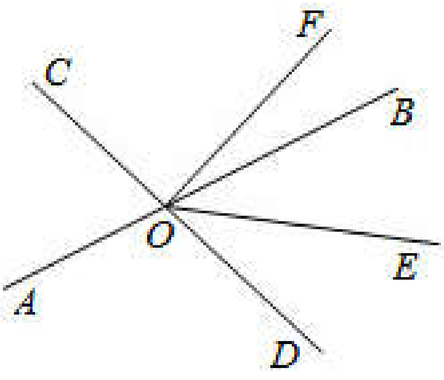
753, topic: Given: FIG, AB // CD, ∠A =∠D, again described reason AC // DE established #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000037685_Q_1.jpg","coordinates":{"A":"-10.00,5.00","B":"-12.00,1.00","C":"-8.50,1.00","D":"-7.00,4.00","E":"-5.87,1.00"},"collineations":{"0":"B###A","1":"C###A","2":"C###D","3":"D###E","4":"E###C###B"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: LineParallelRelation [iLine1=AB, iLine2=CD],EqualityRelation{∠BAC=∠CDE},ProveConclusionRelation:[Proof: LineParallelRelation [iLine1=AC, iLine2=DE]]

754, topic: As shown, the straight line AB, CD intersect at point O, OE equally ∠BOD, ∠AOC =72 °, OF⊥CD, pedal is O, seeking the degree ∠EOF #% # <img>.

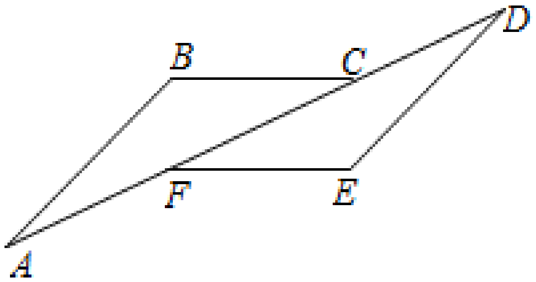


graph:
{"stem":{"pictures":[{"picturename":"1000051524_Q_1.jpg","coordinates":{"A":"-5.08,0.37","B":"-0.98,2.99","C":"-4.84,2.60","D":"-1.18,-0.41","E":"-0.47,1.25","F":"-1.59,3.65","O":"-3.42,1.43"},"collineations":{"0":"O###E","1":"O###F","2":"C###O###D","3":"A###O###B"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: LineCrossRelation [crossPoint =Optional.of (O), iLine1 =AB, iLine2 =CD], AngleBisectorRelation {line =OE, angle =∠BOD, angle1 =∠BOE, angle2 =∠DOE}, EqualityRelation

{∠AOC =(2/5 * Pi)}, LinePerpRelation {line1 =oF, line2 =CD, crossPoint =O}, aNGULAR size: AngleRelation {angle =∠EOF}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] ∠EOF)}

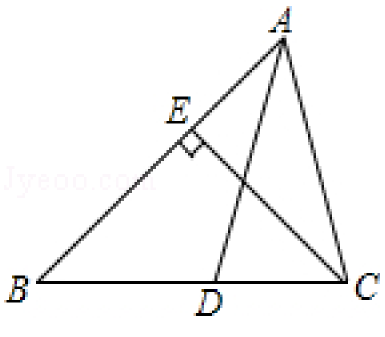
755, topic: FIG, △ABC≌ △DEF, points A, F, C, D in the same line, ∠ABC =135 °, ∠A =20 ° and ∠E seeking the degree ∠DFE% # #. <img>



graph:
{"stem":{"pictures":[{"picturename":"1000063485_Q_1.jpg","coordinates":{"A":"-1.24,-1.40","B":"0.29,1.51","C":"2.83,2.29","D":"4.45,3.76","E":"3.19,0.71","F":"0.58,0.25"},"collineations":{"0":"F###A###C###D","1":"D###E","2":"F###E","3":"A###B","4":"B###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleCongRelation {triangleA =△ABC, triangleB =△DEF}, PointRelation: A, PointRelation: F, PointRelation: C, EqualityRelation {∠ABC =(3/4 * Pi)}, EqualityRelation {∠BAF =(1/9 * Pi)}, the size of the required angle: AngleRelation {angle =∠CFE}, aNGULAR size: AngleRelation {angle =∠DEF}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] ∠CFE)}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] ∠DEF)}

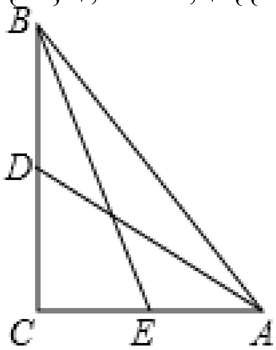
756, topic: FIG, AD is the bisector of △ABC, CE is high △ABC, ∠BAC =60 °, ∠BCE =40 °, the required degree ∠ADB #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"86E224C2DE974845AB37458CC06AF741.jpg","coordinates":{"A":"-9.82,8.99","B":"-14.00,4.00","C":"-8.00,4.00","D":"-10.69,4.00","E":"-11.52,6.95"},"collineations":{"0":"E###B###A","1":"C###A","2":"B###C###D","3":"A###D","4":"C###E"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleRelation:△ABC,TriangleRelation:△ABC,EqualityRelation{∠CAE=(1/3*Pi)},EqualityRelation{∠DCE=(2/9*Pi)},Calculation:AngleRelation{angle=∠ADB},AngleBisectorRelation{line=AD,angle=∠CAE, angle1=∠CAD, angle2=∠DAE},LinePerpRelation{line1=CE, line2=BE, crossPoint=E},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]∠ADB)}

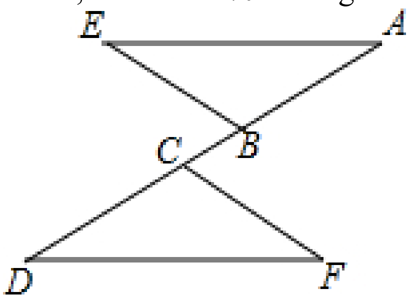
757, topic: FIG, Rt △ABC in, ∠C =90 °, AD, BE, respectively midline BC, AC edge, $ AD =2 \ sqrt {10} $, BE =5, $ {{seek AB} ^ {2}} $ value. #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000080219_Q_1.jpg","coordinates":{"A":"1.00,0.00","B":"-2.00,2.00","C":"-2.0,0.00","D":"-2.00,1.00","E":"-0.50,0.00"},"collineations":{"0":"A###E###C","1":"B###D###C","2":"A###B","3":"B###E","4":"A###D"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: RightTriangleRelation:RightTriangle:△ABC[Optional.of(C)],EqualityRelation{∠DCE=(1/2*Pi)},LineDecileSegmentRelation [iLine1=AD, iLine2=BC, crossPoint=Optional.of(D)],LineDecileSegmentRelation [iLine1=BE, iLine2=AC, crossPoint=Optional.of(E)],EqualityRelation{AD=2*(10^(1/2))},EqualityRelation{BE=5},Calculation:(ExpressRelation:[key:]((AB)^2)),SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]((AB)^2))}

758, topic: Given: As shown, point A, B, C, D in a straight line, AC =DB, AE =DF, BE =CF Proof: AE // DF, BE // CF #% # <img. >



graph:
{"stem":{"pictures":[{"picturename":"1000061417_Q_1.jpg","coordinates":{"A":"11.50,7.00","B":"8.50,5.00","C":"7.00,4.00","D":"4.00,2.00","E":"5.50,7.00","F":"10.00,2.00"},"collineations":{"0":"A###B###C###D","1":"A###E","2":"E###B","3":"C###F","4":"D###F"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

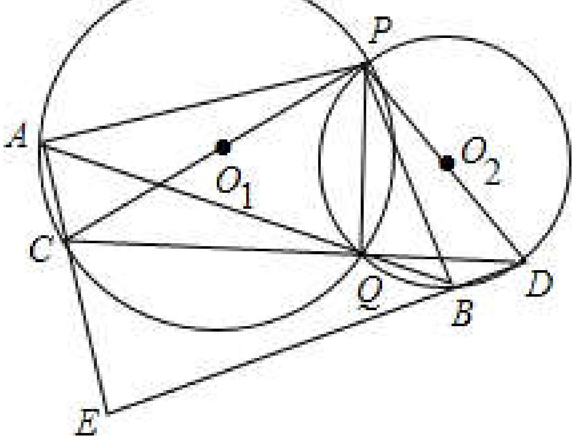
NLP: MultiPointCollinearRelation:[A, B, C, D],EqualityRelation{AC=BD},EqualityRelation{AE=DF},EqualityRelation{BE=CF},LineParallelRelation [iLine1=BE, iLine2=CF],ProveConclusionRelation:[Proof: LineParallelRelation [iLine1=AE, iLine2=DF]]

759, topic:. As shown, the known common portion AB and CD $ BD =\ frac {1} {3} AB =\ frac {1} {4} CD $ segments AB, CD midpoint E, F of is the distance between 10cm, seeking AB, CD are long. #% # <img>

graph:
{"stem":{"pictures":[{"picturename":"1000083103_Q_1.jpg","coordinates":{"A":"-4.97,0.56","B":"-1.97,0.59","C":"1.03,0.62","D":"-2.97,0.58","E":"-3.47,0.57","F":"-0.97,0.60"},"collineations":{"0":"A###E###D###B###F###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: MultiEqualityRelation [multiExpressCompare=BD=(1/3)*AB=(1/4)*CD, originExpressRelationList=[], keyWord=null, result=null],DistanceOfDualPointsRelation{pointA=E, pointB=F, distance=Express:[10]},MiddlePointOfSegmentRelation{middlePoint=E,segment=AB},MiddlePointOfSegmentRelation{middlePoint=F,segment=CD},Calculation:(ExpressRelation:[key:]AB),Calculation:(ExpressRelation:[key:]CD),SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]AB)},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]CD)}

760, topic: FIG, $ \odot {{O} _ {1}} $, $ \odot {{O} _ {2}} $ intersect at P, Q points, where $ \odot {{O} _ the radius of {1}} $ a $ {{r} _ {1}} =2 $, $ \odot {{O} _ {2}} $ radius $ {{r} _ {2}} =\sqrt {2} $. through the point Q as $ CD\perp PQ $, respectively, cross-$ \odot {{O} _ {1}} $ and $ \odot {{O} _ {2}} $ at point C, D, connecting CP, DP, through Q at any point for a straight line AB deposit $ \odot {{O} _ {1}} $ and $ \odot {{O} _ {2}} $ at points A, B, connected AP, BP, AC, DB, and the extension line of the AC and DB at point E.?#%#(1) Prove:? $ \frac {PA} {PB} =\sqrt {2} $ #% # (2) If $ PQ =2 $, $ \angle E $ Determine degrees.

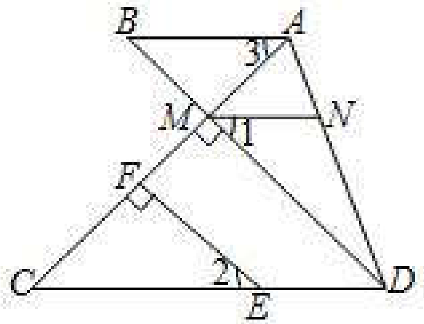


graph:
{"stem":{"pictures":[{"picturename":"1000024971.jpg","coordinates":{"A":"-3.99,0.31","B":"5.97,-2.78","C":"-3.46,-2.00","D":"7.45,-2.00","E":"-2.31,-7.12","O[1]":"0.00,0.00","O[2]":"5.46,0.00","P":"3.46,2.00","Q":"3.46,-2.00"},"collineations":{"0":"A###C###E","1":"B###D###E","2":"A###P","3":"P###O[2]###D","4":"C###O[1]###P","5":"Q###P","6":"P###B","7":"C###Q###D","8":"B###Q###A"},"variable-equals":{},"circles":[{"center":"O[1]","pointincircle":"A###C###Q###P"},{"center":"O[2]","pointincircle":"B###D###Q###P"}]}],"appliedproblems":{}},"substems":[]}

NLP: PointOnLineRelation{point=Q, line=AB, isConstant=false, extension=false},CircleCrossRelation{conic1=Circle[⊙O_1]{center=O_1, analytic=(x-x_O_1)^2+(y-y_O_1)^2=r_O_1^2}, conic2=Circle[⊙O_2]{center=O_2, analytic=(x-x_O_2)^2+(y-y_O_2)^2=r_O_2^2},corssPoints=[P, Q], corssPointNum=2},RadiusRelation{radius=null, circle=Circle[⊙O_1]{center=O_1, analytic=(x-x_O_1)^2+(y-y_O_1)^2=r_O_1^2}, length=Express:[2]},RadiusRelation{radius=null, circle=Circle[⊙O_2]{center=O_2, analytic=(x-x_O_2)^2+(y-y_O_2)^2=r_O_2^2}, length=Express:[(2^(1/2))]},LinePerpRelation{line1=CD, line2=PQ,

crossPoint=Q},LineCrossCircleRelation{line=CD, circle=⊙O_1, crossPoints=[C], crossPointNum=1},LineCrossCircleRelation{line=CD, circle=⊙O_2, crossPoints=[D], crossPointNum=1},SegmentRelation:CP,SegmentRelation:DP,LineCrossCircleRelation{line=AB, circle=⊙O_1, crossPoints=[A], crossPointNum=1},LineCrossCircleRelation{line=AB, circle=⊙O_2, crossPoints=[B], crossPointNum=1},MultiPointCollinearRelation:[A, P],MultiPointCollinearRelation:[B, P],MultiPointCollinearRelation:[A, C],MultiPointCollinearRelation:[D, B],LineCrossRelation [crossPoint=Optional.of(E), iLine1=AC, iLine2=DB],EqualityRelation{PQ=2},Calculation:AngleRelation{angle=∠BEC},ProveConclusionRelation:[Proof: EqualityRelation{((AP)/(BP))=(2^(1/2))}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]∠BEC)}

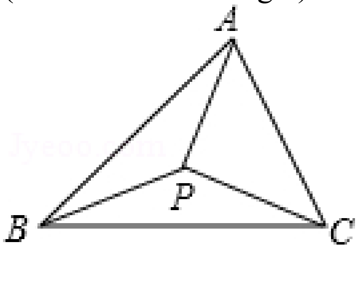
761, topic: FIG known EF⊥AC at point F, DB⊥AC at point M, ∠1 =∠2, ∠3 =∠C, Proof: . AB∥MN #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000050222_Q_1.jpg","coordinates":{"A":"-6.00,6.00","B":"-8.00,6.00","C":"-9.00,3.00","D":"-5.00,3.00","E":"-6.50,3.00","F":"-7.75,4.25","M":"-7.00,5.00","N":"-5.67,5.00"},"collineations":{"0":"A###M###F###C","1":"B###M###D","2":"A###N###D","3":"C###E###D","4":"E###F","5":"A###B","6":"M###N"},"variable-equals":{"0":"∠1=∠DMN","1":"∠2=∠CEF","2":"∠3=∠BAM"},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: LinePerpRelation{line1=EF, line2=AC, crossPoint=F},LinePerpRelation{line1=DB, line2=AC, crossPoint=M},EqualityRelation{∠DMN=∠CEF},EqualityRelation{∠BAM=∠ECF},ProveConclusionRelation:[Proof: LineParallelRelation [iLine1=AB, iLine2=MN]]

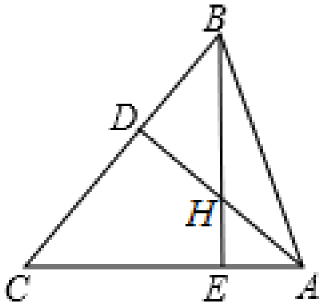
762, topic: FIG., It is known that P, the test described △ABC $ PA + PB + PC＞\ frac {1} {2} \ left (AB + BC + AC \ right) $ #% # <. img>



graph:
{"stem":{"pictures":[{"picturename":"8B04DFE50EBD46AB9B929FDB05E6EBB1.jpg","coordinates":{"A":"-11.00,5.00","B":"-15.00,2.00","C":"-9.00,2.00","P":"-12.00,3.00"},"collineations":{"0":"B###A","1":"C###A","2":"A###P","3":"B###C","4":"B###P","5":"C###P"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleRelation:△ABC,PositionOfPoint2RegionRelation{point=P, region=EnclosedRegionRelation{name=ABC, closedShape=△ABC}, position=inner},ProveConclusionRelation:[Proof: InequalityRelation{AP+BP+CP>(1/2)*(AB+BC+AC)}]

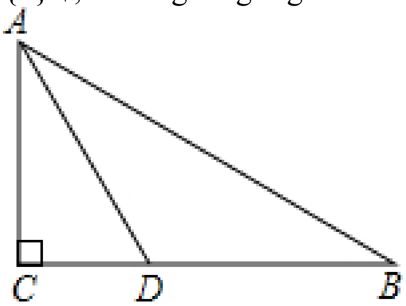
763, topic: As shown in the △ABC, ∠BAC: ∠ABC =7: 6, ∠ABC large ∠C than 10 °, BE, AD △ABC is high, the intersection point H, the required degree ∠DHB #. % # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000051262_Q_1.jpg","coordinates":{"A":"-3.91,3.00","B":"-4.84,5.57","C":"-7.00,3.00","D":"-5.72,4.52","E":"-4.84,3.00","H":"-4.84,3.79"},"collineations":{"0":"A###E###C","1":"C###D###B","2":"B###A","3":"B###H###E","4":"A###H###D"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleRelation: △ABC, EqualityRelation {(∠BAE) / (∠ABD) =(7) / (6)}, TriangleRelation: △ABC, the size of the required angle: AngleRelation {angle =∠BHD}, LinePerpRelation {line1 =BE, line2 =CE, crossPoint =E}, LinePerpRelation {line1 =AD, line2 =CD, crossPoint =D}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] ∠BHD)}

764, topic: As shown, the △ABC, ∠C =90 °, ∠B =30 °, AD is the bisector of △ABC, if $ AC =\ sqrt {3} $, seeking long segment AD . #% # <img>

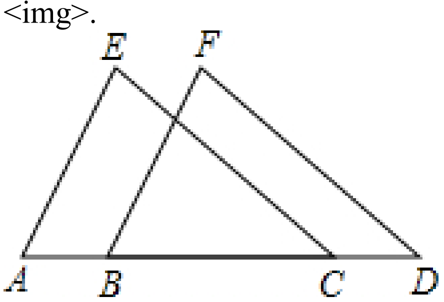


graph:
{"stem":{"pictures":[{"picturename":"1000060443_Q_1.jpg","coordinates":{"A":"0.00,1.73","B":"3.00,0.00","C":"0.00,0.00","D":"1.00,0.00"},"collineations":{"0":"A###B","1":"A###C","2":"A###D","3":"B###D###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: EqualityRelation{AD=v_0},TriangleRelation:△ABC,EqualityRelation{∠ACD=(1/2*Pi)},EqualityRelation{∠ABD=(1/6*Pi)},TriangleRelation:△ABC,EqualityRelation{AC=(3^(1/2))},Calculation:(ExpressRelation:[key:]v_0),AngleBisectorRelation{line=AD,angle=∠BAC, angle1=∠BAD, angle2=∠CAD},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]AD)}

765, topic: FIG, points A, B, C, D in a straight line, AB =CD, AE∥BF, CE∥DF Proof: AE =BF #% #

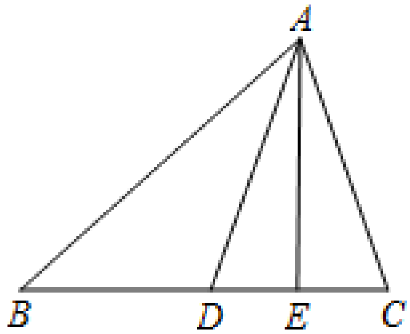
<img>.



graph:
{"stem":{"pictures":[{"picturename":"1000063518_Q_1.jpg","coordinates":{"A":"3.33,-1.08","B":"4.26,-1.08","C":"5.79,-1.08","D":"6.72,-1.08","E":"4.31,1.19","F":"5.24,1.19"},"collineations":{"0":"A###B###C###D","1":"A###E","2":"B###F","3":"E###C","4":"D###F"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: MultiPointCollinearRelation:[A, B, C, D],EqualityRelation{AB=CD},LineParallelRelation [iLine1=AE, iLine2=BF],LineParallelRelation [iLine1=CE, iLine2=DF],ProveConclusionRelation:[Proof: EqualityRelation{AE=BF}]

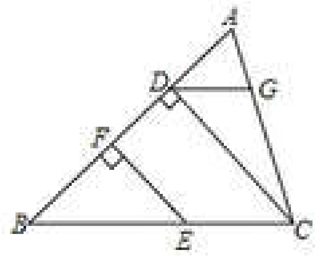
766, topic: FIG, AE, AD respectively, and △ABC high angle bisector, and ∠B =36 °, ∠C =76 °, the required degree ∠DAE #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000063419_Q_1.jpg","coordinates":{"A":"5.74,1.94","B":"2.96,-0.08","C":"6.24,-0.08","D":"5.01,-0.08","E":"5.74,-0.08"},"collineations":{"0":"B###C###E###D","1":"C###A","2":"A###D","3":"A###B","4":"A###E"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleRelation: △ABC, EqualityRelation {∠ABD =(1/5 * Pi)}, EqualityRelation {∠ACE =(19/45 * Pi)}, find the size of the angle: AngleRelation {angle =∠DAE}, LinePerpRelation { line1 =AE, line2 =BE, crossPoint =E}, AngleBisectorRelation {line =AD, angle =∠BAC, angle1 =∠CAD, angle2 =∠BAD}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key :] ∠DAE)}

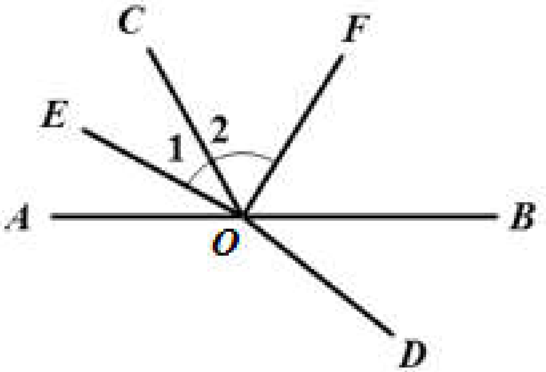
767, topic: FIG, CD⊥AB, EF⊥AB, pedal are D, F, ∠BEF =∠CDG, the test described ∠B + ∠BDG =180 ° #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000050435_Q_1.jpg","coordinates":{"A":"-4.07,4.82","B":"-7.00,2.00","C":"-3.00,2.00","D":"-4.92,4.00","E":"-4.68,2.00","F":"-5.80,3.16","G":"-3.76,4.00"},"collineations":{"0":"A###D###F###B","1":"B###E###C","2":"C###G###A","3":"E###F","4":"D###C","5":"D###G"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: LinePerpRelation{line1=CD, line2=AB, crossPoint=D},LinePerpRelation{line1=EF, line2=AB, crossPoint=F},EqualityRelation{∠BEF=∠CDG},ProveConclusionRelation:[Proof: EqualityRelation{∠EBF+∠FDG=(Pi)}]

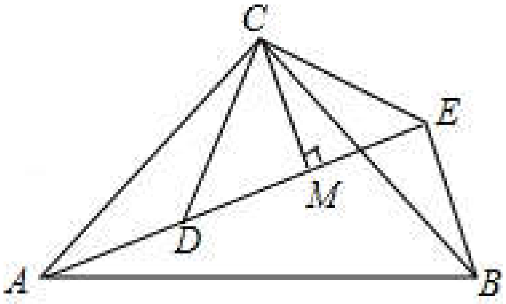
768, topic: FIG, AB, DC intersect at point O, OE, OF are equally ∠AOC, ∠BOC, the test described OE⊥OF #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000030601_Q_1.jpg","coordinates":{"O":"-7.75,2.00","C":"-10.00,5.00","E":"-10.56,3.41","A":"-10.00,2.00","D":"-7.00,1.00","B":"-6.00,2.00","F":"-6.49,4.52"},"collineations":{"0":"A###O###B","1":"C###O###D","2":"E###O","3":"O###F"},"variable-equals":{"0":"∠1=∠EOC","1":"∠2=∠COF"},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: LineCrossRelation [crossPoint=Optional.of(O), iLine1=AB, iLine2=DC],AngleBisectorRelation{line=OE,angle=∠AOC, angle1=∠AOE, angle2=∠COE},AngleBisectorRelation{line=OF,angle=∠BOC, angle1=∠BOF, angle2=∠COF},ProveConclusionRelation:[Proof: LinePerpRelation{line1=OE, line2=OF, crossPoint=O}]

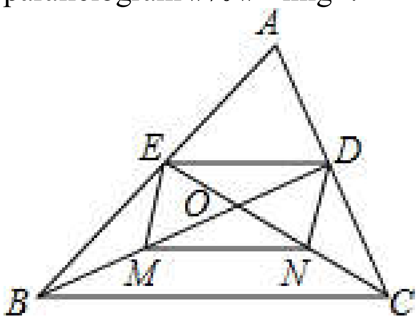
769, topic: FIG, CA =CB, CD =CE, ∠ACB =∠DCE =90 °, the point A, D, E in the same line, CM is high in the edge of △DCE DE, ∠CDE =∠ CED, connected BE, seeking the degree ∠AEB. #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000040012_Q_1.jpg","coordinates":{"A":"0.00,0.00","B":"8.00,0.00","C":"4.00,4.00","D":"2.80,1.14","E":"6.86,2.80","M":"4.83,1.97"},"collineations":{"0":"A###D###M###E","1":"A###C","2":"B###A","3":"C###D","4":"C###M","5":"E###C","6":"B###E","7":"B###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: EqualityRelation{AC=BC},EqualityRelation{CD=CE},MultiEqualityRelation [multiExpressCompare=∠ACB=∠DCE=(1/2*Pi), originExpressRelationList=[], keyWord=null, result=null],TriangleRelation:△DCE,SegmentRelation:DE,LinePerpRelation{line1=CM, line2=DE, crossPoint=M},EqualityRelation{∠CDM=∠CEM},SegmentRelation:BE,Calculation:AngleRelation{angle=∠BEM},LinePerpRelation{line1=CM, line2=AM, crossPoint=M},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]∠BEM)}

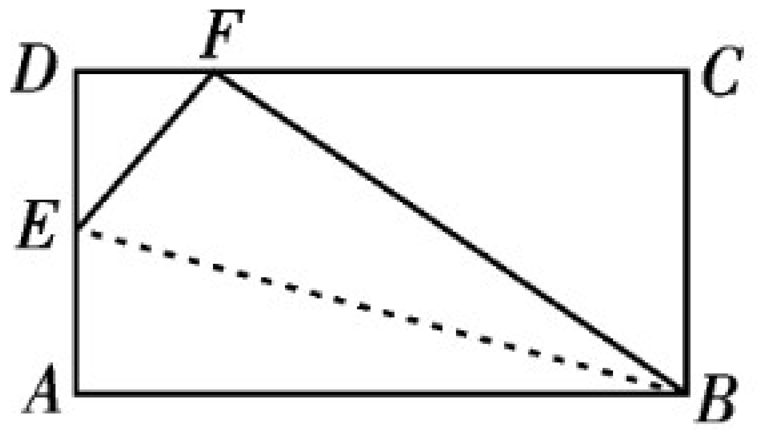
770, topic: As shown, the side AC △ABC, the BD line AB, CE intersect at point O, M, N are the midpoints BO, CO, and sequentially connecting points D, E, M, N #. Prove% #: DEMN quadrilateral is a parallelogram #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000034239_Q_1.jpg","coordinates":{"A":"-8.00,6.00","B":"-11.00,3.00","C":"-6.00,3.00","D":"-7.00,4.50","E":"-9.50,4.50","M":"-9.67,3.50","N":"-7.17,3.50","O":"-8.33,4.00"},"collineations":{"0":"A###B###E","1":"B###C","2":"A###D###C","3":"E###D","4":"D###N","5":"M###N","6":"E###M","7":"E###O###C","8":"B###O###D"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleRelation:△ABC,SegmentRelation:BD,SegmentRelation:CE,LineCrossRelation [crossPoint=Optional.of(O), iLine1=BD, iLine2=CE],LineDecileSegmentRelation [iLine1=BD, iLine2=AC, crossPoint=Optional.of(D)],LineDecileSegmentRelation [iLine1=CE, iLine2=AB, crossPoint=Optional.of(E)],MiddlePointOfSegmentRelation{middlePoint=M,segment=BO},MiddlePointOfSegmentRelation{middlePoint=N,segment=CO},ProveConclusionRelation:[Proof: ParallelogramRelation{parallelogram=Parallelogram:DEMN}]

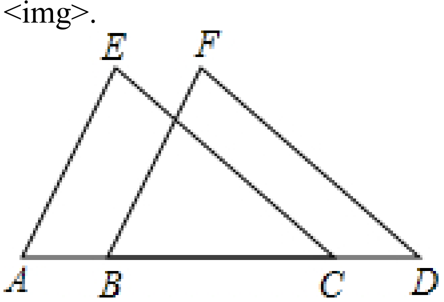
771, topic: FIG known paper rectangle ABCD, if the $ △ABE $ BE folded upwardly along the fold, A point falls exactly on the edge CD, this set point is F, at this time $ AE: ED =5 : 3 $, $ BE =5 \ sqrt 5 $, find the length and width of the rectangle.



graph:
{"stem":{"pictures":[{"picturename":"1000004697_Q_1.jpg","coordinates":{"A":"1.19,0.00","B":"11.18,0.00","C":"11.18,7.99","D":"1.19,7.99","E":"1.19,5.02","F":"5.21,8.01"},"collineations":{"0":"A###B","1":"B###C","2":"E###B","3":"E###F","4":"F###B","5":"A###E###D","6":"D###F###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: PointOnLineRelation{point=A, line=CD, isConstant=false, extension=false},EqualityRelation{BE=5*(5^(1/2))}

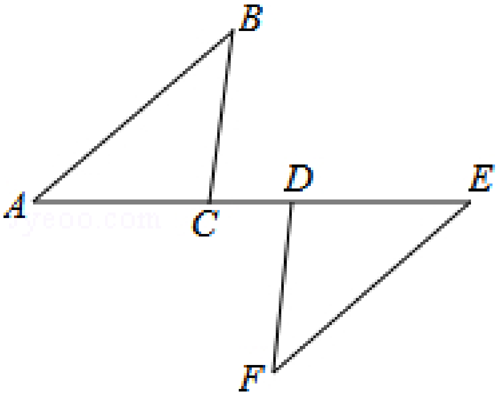
772, topic: FIG, points A, B, C, D in a straight line, AB =CD, AE⫽BF, CE⫽DF Proof: AE =BF #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000063518_Q_1.jpg","coordinates":{"A":"3.33,-1.08","B":"4.26,-1.08","C":"5.79,-1.08","D":"6.72,-1.08","E":"4.31,1.19","F":"5.24,1.19"},"collineations":{"0":"A###B###C###D","1":"A###E","2":"B###F","3":"E###C","4":"D###F"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: MultiPointCollinearRelation:[A, B, C, D],EqualityRelation{AB=CD},LineParallelRelation [iLine1=AE, iLine2=BF],LineParallelRelation [iLine1=CE, iLine2=DF],ProveConclusionRelation:[Proof: EqualityRelation{AE=BF}]

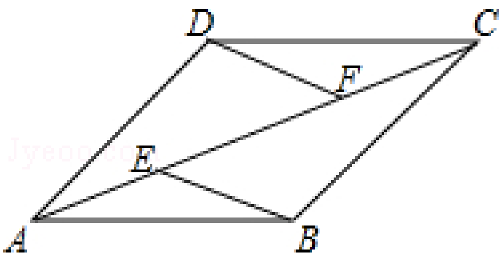
773, topic: FIG sides △ABC and △EFD line segment AE, respectively, points C, D on the line segment AE, AC =DE, AB⫽EF, AB =EF Proof:. BC =FD #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000030877_Q_1.jpg","coordinates":{"A":"-5.00,0.00","B":"-2.59,2.01","C":"-3.00,0.00","D":"-2.00,0.00","E":"0.00,0.00","F":"-2.41,-2.01"},"collineations":{"0":"A###B","1":"B###C","2":"A###C###D###E","3":"D###F","4":"E###F"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP:
TriangleRelation:△ABC,TriangleRelation:△EFD,SegmentRelation:AE,PointOnLineRelation{point=C, line=AE, isConstant=false, extension=false},PointOnLineRelation{point=D, line=AE, isConstant=false, extension=false},EqualityRelation{AC=DE},LineParallelRelation [iLine1=AB, iLine2=EF],EqualityRelation{AB=EF},ProveConclusionRelation:[Proof: EqualityRelation{BC=DF}]

774, topic:. As shown, the quadrilateral ABCD, AB // CD, E, F two points on a diagonal line AC, and AE =CF, DF // BE #% # Proof: # quadrangle ABCD is a parallelogram%. # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000084580_Q_1.jpg","coordinates":{"A":"-5.48,-1.85","B":"-2.20,-1.85","C":"-0.45,1.43","D":"-3.73,1.43","E":"-4.00,-0.89","F":"-1.93,0.46"},"collineations":{"0":"B###A","1":"D###C","2":"C###B","3":"D###A","4":"A###E###F###C","5":"D###F","6":"E###B"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: Know:QuadrilateralRelation{quadrilateral=ABCD},LineParallelRelation [iLine1=AB, iLine2=CD],PointOnLineRelation{point=E, line=AC, isConstant=false, extension=false},PointOnLineRelation{point=F, line=AC, isConstant=false, extension=false},EqualityRelation{AE=CF},LineParallelRelation [iLine1=DF, iLine2=BE],ProveConclusionRelation:[Proof: ParallelogramRelation{parallelogram=Parallelogram:ABCD}]

775, topic: known △ABC, AB =AC, BC will be translated in a direction △ABC obtained △DEF #% # (1) 1, is connected BD, AF, Proof: . BD =AF; #% # (2) in FIG. 2, M is a point on the edge AB, BC through M parallel lines for each edge cross MN AC, DE, DF at points G, H, N, connected BH, GF, Proof: . BH =GF #% # <img>

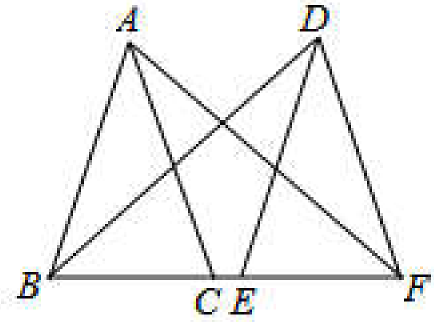


图1

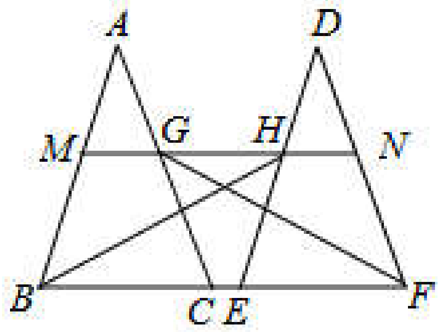
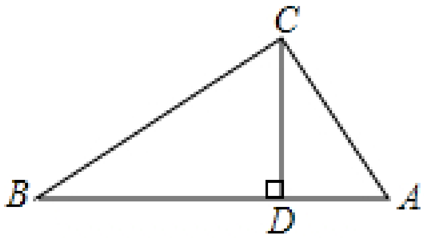


图2

graph:
{"stem":{"pictures":[],"appliedproblems":{}},"substems":[{"substemid":"1","questionrelies":"","pictures":[{"picturename":"1000040571_Q_1.jpg","coordinates":{"A":"1.00,3.00","B":"0.00,0.00","C":"2.00,0.00","D":"4.00,3.00","E":"3.00,0.00","F":"5.00,0.00"},"collineations":{"0":"B###C###E###F","1":"A###B","2":"C###A","3":"D###E","4":"D###F"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},{"substemid":"2","questionrelies":"","pictures":[{"picturename":"1000040571_Q_1.jpg","coordinates":{"A":"1.00,3.00","B":"0.00,0.00","C":"2.00,0.00","D":"4.00,3.00","E":"3.00,0.00","F":"5.00,0.00","G":"1.33,2.00","H":"3.67,2.00","M":"0.67,2.00","N":"4.33,2.00"},"collineations":{"0":"G###M###H###N","1":"A###M###B","2":"A###G###C","3":"D###H###E","4":"D###N###F","5":"G###H","6":"H###B","7":"G###F"},"variable-equals":{},"circles":[]}],"appliedproblems":{}}]}

NLP:
TriangleRelation:△ABC,EqualityRelation{AB=AC},TranslateRelation{preData=△ABC,afterData=△DEF,translateInfos='[TranslateInfo{rotateUnit=", translateDirection=null, lineDirection=BC}]},(ExpressRelation:[key:]1),SegmentRelation:BD,SegmentRelation:AF,(ExpressRelation:[key:]2),PointOnLineRelation{point=M, line=AB, isConstant=false, extension=false},LineParallelRelation [iLine1=BC, iLine2=BF],LineCrossRelation [crossPoint=Optional.of(G), iLine1=AC, iLine2=MN],LineCrossRelation [crossPoint=Optional.of(H), iLine1=DE, iLine2=MN],LineCrossRelation [crossPoint=Optional.of(N), iLine1=DF, iLine2=MN],SegmentRelation:BH,SegmentRelation:GF,ProveConclusionRelation:[Proof: EqualityRelation{BD=AF}],ProveConclusionRelation:[Proof: EqualityRelation{BH=FG}]

776, topic: in the △ABC, ∠ACB =90 °, CD high edge AB, AB =13cm, BC =12cm, AC =5cm, seeking: #% # (1) △ABC area;% # long # (2) CD's. #% # <img>

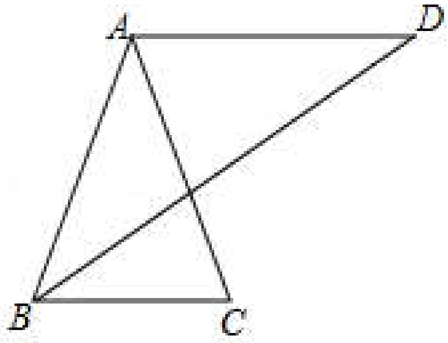


graph:
{"stem":{"pictures":[{"picturename":"9CE279A06845461691140C19DC9EFA5B.jpg","coordinates":{"A":"-1.00,3.00","B":"-14.00,3.00","C":"-2.92,7.62","D":"-2.92,3.00"},"collineations":{"0":"A###D###B","1":"C###A","2":"C###B","3":"C###D"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleRelation:△ABC,EqualityRelation{∠ACB=(1/2*Pi)},LinePerpRelation{line1=CD, line2=AB, crossPoint=D},EqualityRelation{AB=13},EqualityRelation{BC=12},EqualityRelation{AC=5},LinePerpRel

ation{line1=CD, line2=BD, crossPoint=D},EqualityRelation{S_△ABC=v_0},Calculation:(ExpressRelation:[key:]v_0),EqualityRelation{CD=v_1},Calculation:(ExpressRelation:[key:]v_1),SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]S_△ABC)},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]CD)}

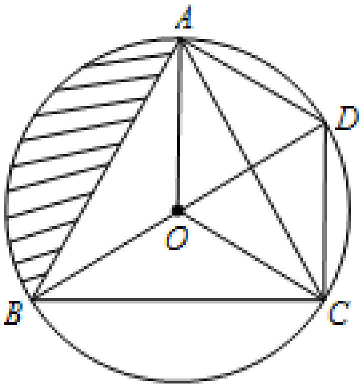
777, topic: FIG known that AB =AC =AD, and AD // BC, Proof: . ∠C =2∠D #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000027144_Q_1.jpg","coordinates":{"A":"2.00,5.00","B":"0.00,0.00","C":"4.00,0.00","D":"7.39,5.00"},"collineations":{"0":"A###B","1":"C###B","2":"A###C","3":"A###D","4":"B###D"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: MultiEqualityRelation [multiExpressCompare=AB=AC=AD, originExpressRelationList=[], keyWord=null, result=null],LineParallelRelation [iLine1=AD, iLine2=BC],ProveConclusionRelation:[Proof: EqualityRelation{∠ACB=2*∠ADB}]

778, topic: FIG, O is an inner △ABC, and the extension line BO circumcircle of △ABC intersect at D, connected DC, DA, OA, OC, OADC quadrilateral parallelogram% # # (1) confirmation. :. △BOC≌ △CDA #% # (2) when the AB =2, find the shaded area #% # <img>

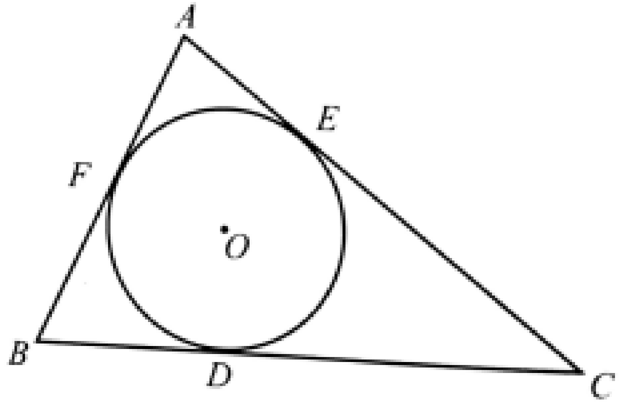


graph:
{"stem":{"pictures":[{"picturename":"1000039644_Q_1.jpg","collineations":{"0":"A###B","1":"B###C","2":"C###A","3":"O###A","4":"B###O###D","5":"O###C","6":"A###D","7":"C###D"},"coordinates":{"A":"0.00,3.46","B":"-2.00,0.00","C":"2.00,0.00","D":"2.00,2.31","O":"0.00,1.15"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"A###B###C###D"}]}],"appliedproblems":{}},"substems":[]}

NLP: InscribedShapeOfCircleRelation{closedShape=△ABC, circle=Circle[⊙O_0]{center=O_0, analytic=(x-x_O_0)^2+(y-y_O_0)^2=r_O_0^2}},CoreAndShapeRelation:O/△ABC/InnerCentre,LineCrossCircleRelation{line=BO, circle=⊙O_0, crossPoints=[D],

crossPointNum=1},MultiPointCollinearRelation:[D, C],MultiPointCollinearRelation:[D, A],MultiPointCollinearRelation:[O, A],MultiPointCollinearRelation:[O, C],ParallelogramRelation{parallelogram=Parallelogram:ADCO},EqualityRelation{AB=2},ProveConclusionRelation:[Proof: TriangleCongRelation{triangleA=△BOC, triangleB=△CDA}]

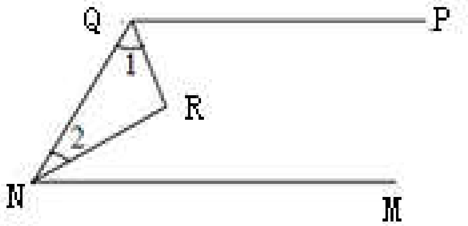
779, topic: FIG, ⊙O is △ABC inscribed circle, D, E, F for the cut point, and AB =9cm, BC =14cm, CA =13cm, seeking AF, BD, CE #% longer. # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000083383_Q_1.jpg","coordinates":{"A":"-0.71,2.74","B":"-2.93,-1.17","C":"4.05,-1.69","D":"-0.44,-1.36","E":"0.75,1.38","F":"-1.70,1.00","O":"-0.32,0.22"},"collineations":{"0":"A###F###B","1":"B###D###C","2":"C###E###A"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"D###E###F"}]}],"appliedproblems":{}},"substems":[]}

NLP: CircleRelation {circle =Circle [⊙O] {center =O, analytic =(x-x_O) ^ 2 + (y-y_O) ^ 2 =r_O ^ 2}}, CircumscribedShapeOfCircleRelation: △ABC / Circle [⊙O] {center =O, analytic =(x-x_O) ^ 2 + (y-y_O) ^ 2 =r_O ^ 2} Points: [D, E, F], EqualityRelation {AB =9}, EqualityRelation {BC =14} , EqualityRelation {AC =13}, evaluation (size) :(ExpressRelation: [key:] AF), evaluation (size) :(ExpressRelation: [key:] BD), evaluation (size) :(ExpressRelation: [key:] CE), SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] AF)}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] BD)}, SolutionConclusionRelation { evaluation relation =(size) :(ExpressRelation: [key:] CE)}

780, topic: FIG known QR equally ∠PQN, NR equally ∠QNM, ∠1 + ∠2 =90 °, Proof: . PQ∥MN #% # <img>

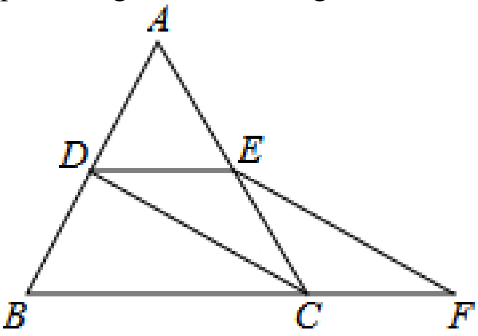


graph:
{"stem":{"pictures":[{"picturename":"1000050441_Q_1.jpg","coordinates":{"M":"-3.00,2.00","N":"-8.00,2.00","P":"-3.00,5.00","Q":"-7.00,5.00","R":"-5.92,3.50"},"collineations":{"0":"Q###P","1":"Q###N","2":"N###M","3":"N###R","4":"Q###R"},"variable-equals":{"0":"∠1=∠NQR","1":"∠2=∠QNR"},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: AngleBisectorRelation{line=QR,angle=∠NQP, angle1=∠NQR, angle2=∠

PQR},AngleBisectorRelation{line=NR,angle=∠MNQ, angle1=∠MNR, angle2=∠QNR},EqualityRelation{∠NQR+∠QNR=(1/2*Pi)},ProveConclusionRelation:[Proof: LineParallelRelation [iLine1=PQ, iLine2=MN]]

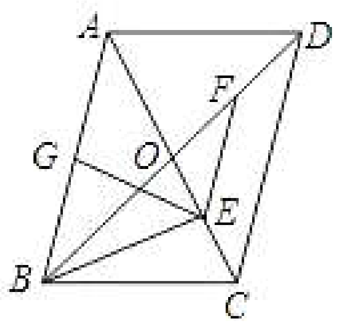
781, topic: FIG, △ABC is an equilateral triangle, D, E are AB, the midpoint of the AC, BC extended to a point F., So $ CF =\ frac {1} {2} BC $, and connected to CD . EF confirmation: DEFC quadrilateral is a parallelogram #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000031905_Q_1.jpg","coordinates":{"A":"-6.32,1.86","B":"-7.30,0.16","C":"-5.30,0.16","D":"-6.80,1.02","E":"-5.81,1.01","F":"-4.30,0.16"},"collineations":{"0":"A###D###B","1":"B###C###F","2":"A###E###C","3":"D###E","4":"D###C","5":"E###F"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: RegularTriangleRelation:RegularTriangle:△ABC,MiddlePointOfSegmentRelation{middlePoint=D,segment=AB},MiddlePointOfSegmentRelation{middlePoint=E,segment=AC},PointOnLineRelation{point=F, line=BC, isConstant=false, extension=true},EqualityRelation{CF=(1/2)*BC},SegmentRelation:CD,SegmentRelation:EF,ProveConclusionRelation:[Proof: ParallelogramRelation{parallelogram=Parallelogram:CDEF}]

782, topic: FIG parallelogram ABCD, the diagonals AC, BD intersect at point O, BD =2AD, E, F, G, respectively, OD, the midpoint of the confirmation OC AB:% # # (1) BE⊥AC; #% # (2) EG =EF #% # <img>

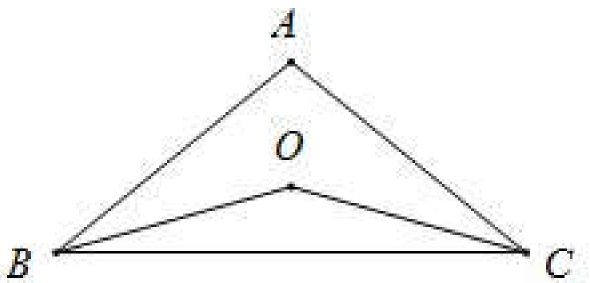


graph:
{"stem":{"pictures":[{"picturename":"1000040185_Q_1.jpg","coordinates":{"A":"-4.31,5.59","B":"-5.56,1.35","C":"-2.56,1.35","D":"-1.31,5.59","E":"-3.00,2.41","F":"-2.37,4.53","G":"-4.93,3.47","O":"-3.43,3.47"},"collineations":{"0":"A###B###G","1":"A###D","2":"A###O###E###C","3":"G###E","4":"O###B###F###D","5":"B###E","6":"B###C","7":"D###C","8":"E###F"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: ParallelogramRelation{parallelogram=Parallelogram:ABCD},LineCrossRelation

[crossPoint=Optional.of(O), iLine1=AC, iLine2=BD],EqualityRelation{BD=2*AD},MiddlePointOfSegmentRelation{middlePoint=E,segment=OC},MiddlePointOfSegmentRelation{middlePoint=F,segment=OD},MiddlePointOfSegmentRelation{middlePoint=G,segment=AB},ProveConclusionRelation:[Proof: LinePerpRelation{line1=BE, line2=AC, crossPoint=E}],ProveConclusionRelation:[Proof: EqualityRelation{EG=EF}]

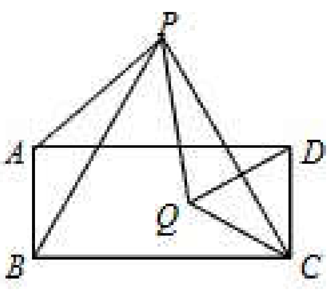
783, topic: As shown in $ \ vartriangle ABC $ in, $ \ angle ABC $, $ \ angle ACB $ bisectors intersect at point O #% # ① When the angle A 30 ^ circ when $ $ \ =\. , $ \ angle BOC =105 ^ \ circ =90 ^ \ circ + \ frac {1} {2} \ times 30 ^ \ circ $; #% ##% # ② when $ \ angle A =40 ^ \ circ $ when, $ \ angle BOC =110 ^ \ circ =90 ^ \ circ + \ frac {1} {2} \ times 40 ^ \ circ $; #% ##% # ③ when $ \ angle A =50 ^ \ circ $ time, $ \ angle BOC =115 ^ \ circ =90 ^ \ circ + \ frac {1} {2} \ times 50 ^ \ circ $; ... #% # when $ \ angle A =n ^ \ circ $. when (n is a known number), guess $ \ angle BOC =$ ______, and explain the reasons triangle with knowledge learned.



graph:
{"stem":{"pictures":[{"picturename":"1000006429_Q_1.jpg","coordinates":{"A":"-8.31,3.65","B":"-13.71,-0.74","C":"-4.52,-0.63","O":"-8.52,1.14"},"collineations":{"0":"A###B","1":"A###C","2":"C###B","3":"B###O","4":"C###O"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: AngleBisectorRelation{line=BO,angle=∠ABC, angle1=∠ABO, angle2=∠CBO},AngleBisectorRelation{line=CO,angle=∠ACB, angle1=∠ACO, angle2=∠BCO},TriangleRelation:△ABC,ConditionRelation{EqualityRelation{∠BAC=(1/6*Pi)}, MultiEqualityRelation [multiExpressCompare=∠BOC=(7/12*Pi)=(1/2*Pi)+(1/2)*(1/6*Pi), originExpressRelationList=[], keyWord=null, result=null]},ConditionRelation{EqualityRelation{∠BAC=(2/9*Pi)}, MultiEqualityRelation [multiExpressCompare=∠BOC=(11/18*Pi)=(1/2*Pi)+(1/2)*(2/9*Pi), originExpressRelationList=[], keyWord=null, result=null]},(ExpressRelation:[key:]n),ConditionRelation{EqualityRelation{∠BAC=(5/18*Pi)}, MultiEqualityRelation [multiExpressCompare=∠BOC=(23/36*Pi)=(1/2*Pi)+(1/2)*(5/18*Pi), originExpressRelationList=[], keyWord=null, result=null]},OmitExpressRelation [express=Express:[...], value=null, separator=null, items=[], type=UNKNOWN],EqualityRelation{∠BAC=1/180*n*Pi}

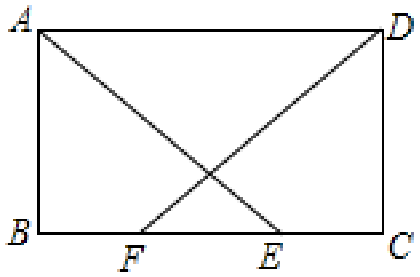
784, topic: as shown, is a rectangular quadrilateral $ ABCD $, $ \ vartriangle PBC $ and $ \ vartriangle QCD $ is an equilateral triangle, and a point above the $ P $ rectangle, points within the rectangle $ Q $ confirmation: ? #% # (1) $ \ angle PBA =\ angle PCQ =30 ^ \ circ $;? #% # (2) $ PA =PQ $.



graph:
{"stem":{"pictures":[{"picturename":"1000005467_Q_1.jpg","coordinates":{"A":"-9.95,5.00","B":"-9.82,-2.17","C":"3.05,-1.93","D":"2.92,5.24","P":"-3.59,9.10","Q":"-3.22,1.54"},"collineations":{"0":"A###P","1":"B###P","2":"A###B","3":"A###D","4":"C###D","5":"B###C","6":"P###Q","7":"P###C","8":"D###Q","9":"C###Q"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP:
RectangleRelation{rectangle=Rectangle:ABCD},RegularTriangleRelation:RegularTriangle:△PBC,RegularTriangleRelation:RegularTriangle:△QCD,PositionOfPoint2RegionRelation{point=P, region=EnclosedRegionRelation{name=ABCD, closedShape=Rectangle:ABCD}, position=outer},PositionOfPoint2RegionRelation{point=Q, region=EnclosedRegionRelation{name=ABCD, closedShape=Rectangle:ABCD}, position=inner},ProveConclusionRelation:[Proof: MultiEqualityRelation [multiExpressCompare=∠ABP=∠PCQ=(1/6*Pi), originExpressRelationList=[], keyWord=null, result=null]],ProveConclusionRelation:[Proof: EqualityRelation{AP=PQ}]

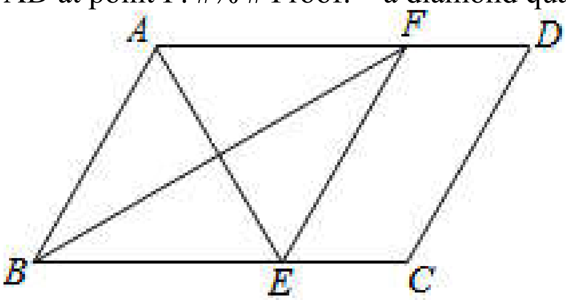
785, topic: (2015 · Jinan) As in the rectangle ABCD, BF =CE, Proof: . AE =DF #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"A6A2839B821242398D6B1A1B411605F8.jpg","coordinates":{"A":"-14.00,7.00","B":"-14.00,3.00","C":"-7.00,3.00","D":"-7.00,7.00","E":"-9.00,3.00","F":"-12.00,3.00"},"collineations":{"0":"B###A","1":"A###D","2":"E###A","3":"B###F###E###C","4":"C###D","5":"D###F"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP:
RectangleRelation{rectangle=Rectangle:ABCD},EqualityRelation{BF=CE},ProveConclusionRelation:[Proof: EqualityRelation{AE=DF}]

786, topic: Given: As in the □ABCD, ∠BAD bisector BC at the point E, ∠ABC cross the bisector AD at point F. #% # Proof: a diamond quadrangle ABEF% # #. <img>

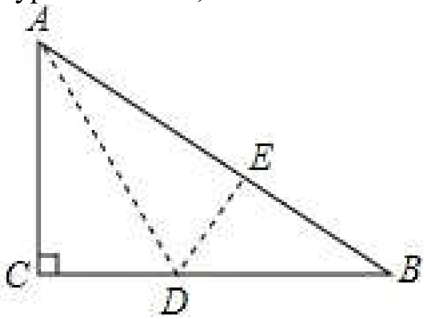


graph:
{"stem":{"pictures":[{"picturename":"1000081638_Q_1.jpg","coordinates":{"A":"2.00,4.00","B":"0.00,0.00

","C":"7.00,0.00","D":"9.00,4.00","E":"4.47,0.00","F":"6.47,4.00"},"collineations":{"0":"A###F###D","1": "B###E###C","2":"D###C","3":"B###F","4":"A###E","5":"A###B","6":"E###F"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: AngleBisectorRelation{line=AE,angle=∠BAF, angle1=∠BAE, angle2=∠EAF},AngleBisectorRelation{line=BF,angle=∠ABE, angle1=∠ABF, angle2=∠EBF},ParallelogramRelation{parallelogram=Parallelogram:ABCD},ProveConclusionRelation:[Proof: RhombusRelation{rhombus=Rhombus:ABEF}]

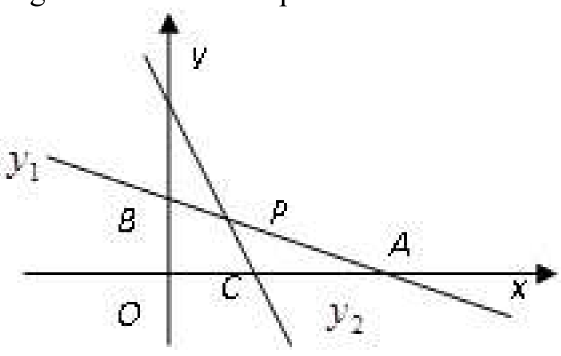
787, topic: As shown, the paper sheet has a right-angled triangle, two right-angle edge of known AC =6cm, BC =8cm, now folded along a straight line at right angles to the AD side AC, it falls exactly on the hypotenuse AB, AE and with coincidence, seeking long CD. <img>



graph:

NLP: EqualityRelation {CD =v_0}, EqualityRelation {BC =8}, LineCoincideRelation [iLine1 =AB, iLine2 =AE], evaluated (size) :(ExpressRelation: [key:] v_0), SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] CD)}

788, topic: As shown in the xOy plane rectangular coordinate system, a straight line is known $ {y_1} =- \ frac {2} {3} x + 2 $ x-axis, y-axis respectively, intersect at points A and B , straight $ {y_2} =kx + b \ left ({k \ ne 0} \ right) $ passing point $ C (1,0) $ and the line segment AB at point P, and the $ \ vartriangle ABO $ into the two parts.? #% # (1) find $ \ vartriangle ABO $ area.? #% # (2) when the $ \ area of the two portions vartriangle ABO $ is divided into a straight line CP is equal to, find the point P of coordinates and a straight line function expression CP.

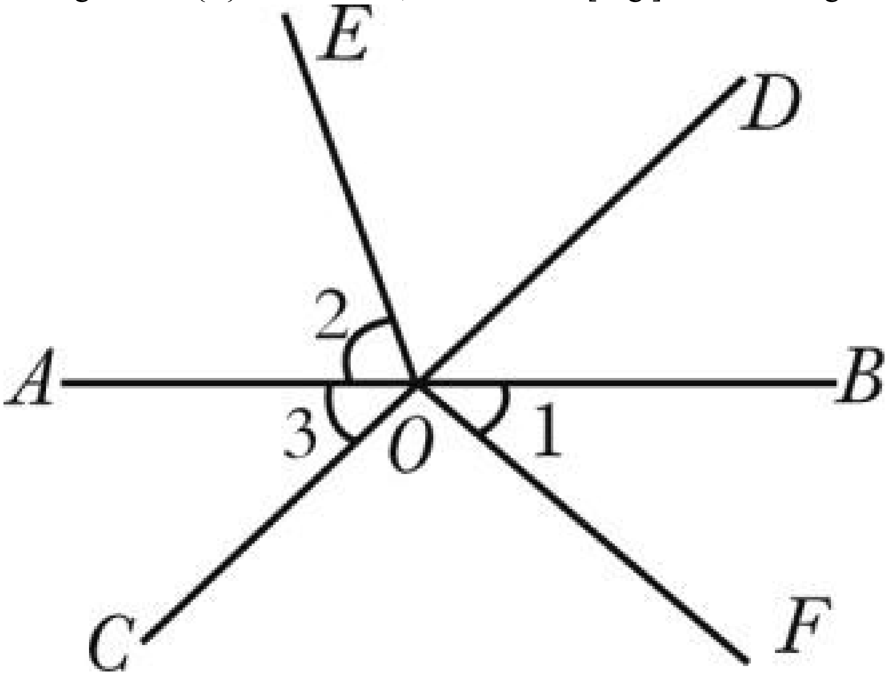


graph:
[{"variable-equals":{},"picturename":"1000001499_Q_1.jpg","collineations":{"1":"B###P###A","0":"O###A###C"},"coordinates":{"P":"0.75,1.50","A":"3.00,0.00","B":"0.00,2.00","C":"1.00,0.00","O":"0.00,0.00"}}]

NLP: CoorSysTypeRelation [name=xOy, types=直角Coordinate:系],LineCrossRelation [crossPoint=Optional.of(A), iLine1=StraightLine[n_0] analytic :y_1=-2/3*x+2 slope:-2/3 b: isLinearFunction:true, iLine2=StraightLine[X] analytic :y=0 slope:0 b:0

isLinearFunction:false],LineCrossRelation [crossPoint=Optional.of(B), iLine1=StraightLine[n_0] analytic :y_1=-2/3*x+2 slope:-2/3 b: isLinearFunction:true, iLine2=StraightLine[Y] analytic :x=0 slope: b: isLinearFunction:false],PointOnLineRelation{point=C(1,0), line=StraightLine[n_1] analytic :y_2=k*x+b[k≠0] slope:k b: isLinearFunction:true, isConstant=false, extension=false},LineCrossRelation [crossPoint=Optional.of(P), iLine1=StraightLine[n_1] analytic :y_2=k*x+b[k≠0] slope:k b: isLinearFunction:true, iLine2=AB],EqualityRelation{S_△ABO=v_2},Calculation:(ExpressRelation:[key:]v_2),Coordinate:PointRelation:P,Analytic expression,Equation:SegmentRelation:CP,SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]S_△ABO)},SolutionConclusionRelation{relation=Coordinate:PointRelation:P},SolutionConclusionRelation{relation=Analytic expression,Equation:StraightLineRelation{straightLine=StraightLine[CP] analytic :y=k_CP*x+b_CP slope:null b:null isLinearFunction:false}}

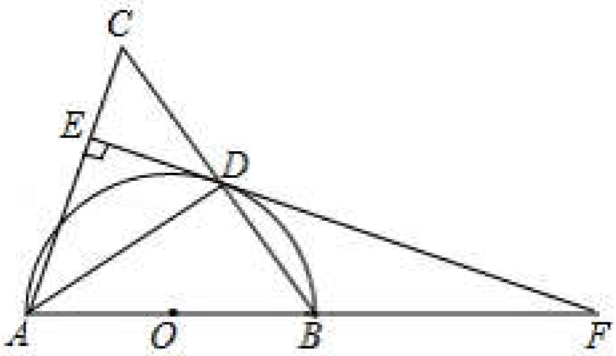
789, topic: As shown, the straight line \$ AB \$, \$ CD \$ at point \$ O \$, \$ OE \$ bisecting \$ \ angle AOD \$, \$ \ angle FOC {=} 90 ^ \ circ \$, \$ ∠1 =40 \$ [deg.]. ∠2 seeking \$ \$ \$ ∠3 \$ and degree.



graph:
{"stem":{"pictures":[{"picturename":"AD80C1C723A64C5184839E8AFC645CD8.jpg","coordinates":{"A":"-14.00,6.00","B":"-4.00,6.00","C":"-10.35,4.40","D":"-6.94,8.45","E":"-10.42,9.04","F":"-6.47,3.87","O":"-9.00,6.00"},"collineations":{"0":"B###O###A","1":"C###O###D","2":"O###E","3":"O###F"},"variable-equals":{"0":"∠1=∠BOF","1":"∠2=∠AOE","2":"∠3=∠AOC"},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: LineCrossRelation [crossPoint =Optional.of (O), iLine1 =AB, iLine2 =CD], AngleBisectorRelation {line =OE, angle =∠AOD, angle1 =∠AOE, angle2 =∠DOE}, EqualityRelation {∠COF =(1/2 * Pi)}, EqualityRelation {∠BOF =(2/9 * Pi)}, the size of the required angle: (ExpressRelation: [key:] ∠AOE), the size of the required angle: (ExpressRelation: [key:] ∠AOC), SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] ∠AOE)}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] ∠AOC)}

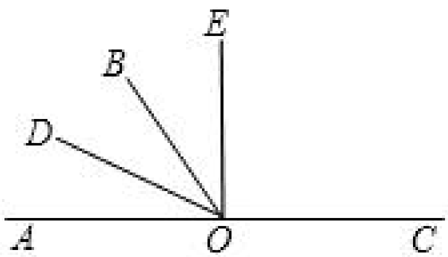
790, topic: As shown in the \$ △ABC \$, \$ AB =AC \$, as in AB diameter semicircular \$ \ odot O \$, BC at point D, the AD is connected, through the point D as \$ DE⊥AC \$, pedal point E, cross-AB extension line to a point F.?#%#(1) Proof: EF is \$ \ odot O \$ #% # tangents (2) If the radius \$ \ odot O \$ is.? is 5, \$ \ sin \ angle ADE =\ frac {4} {5} \$, BF seeking long.



graph:
{"stem":{"pictures":[{"picturename":"1000010208_Q_1.jpg","coordinates":{"A":"0.00,0.00","B":"10.00,0.00","C":"2.80,9.60","D":"6.40,4.80","E":"1.79,6.14","F":"22.86,0.00","O":"5.00,0.00"},"collineations":{"0":"A###E###C","1":"C###D###B","2":"E###D###F","3":"A###O###B###F","4":"A###D"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"B###A###D"}]}],"appliedproblems":{}},"substems":[{"substemid":"1","questionrelies":"2","pictures":[],"appliedproblems":{}},{"substemid":"2","questionrelies":"1","pictures":[],"appliedproblems":{}}]}

NLP: TriangleRelation:△ABC,EqualityRelation{AB=AC},DiameterRelation{diameter=AB, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, length=null},LineCrossCircleRelation{line=BC, circle=⊙O, crossPoints=[D], crossPointNum=1},SegmentRelation:AD,LinePerpRelation{line1=DE, line2=AC, crossPoint=E},LineCrossRelation [crossPoint=Optional.of(F), iLine1=DE, iLine2=AB],EqualityRelation{BF=v_0},RadiusRelation{radius=null, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, length=Express:[5]},EqualityRelation{sin(∠ADE)=(4/5)},Calculation:(ExpressRelation:[key:]v_0),ProveConclusionRelation:[Proof: LineContactCircleRelation{line=EF, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, contactPoint=Optional.of(D), outpoint=Optional.absent()}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]BF)}

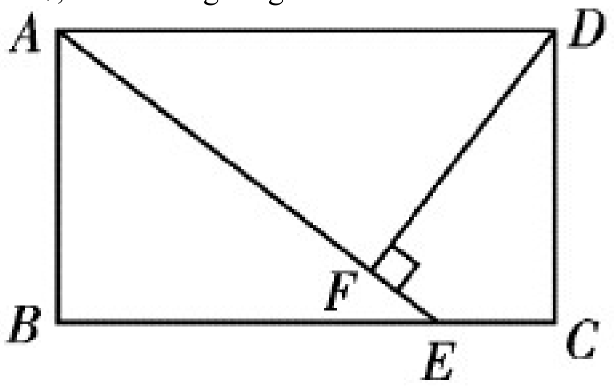
791, topic: FIG known point O is on a straight line AC, OB is a ray, the OD bisecting $ ∠AOB $, OE in the $ ∠BOC $, $ \angle BOE =\frac {1} {2} \angle EOC $, $ ∠DOE =70 ° $, $ ∠EOC $ required degree.



graph:
{"stem":{"pictures":[{"picturename":"1000025169_Q_1.jpg","coordinates":{"A":"-5.00,0.00","B":"-1.71,4.70","C":"5.00,0.00","D":"-4.33,2.50","E":"0.87,4.92","O":"0.00,0.00"},"collineations":{"0":"A###O###C","1":"O###B","2":"D###O","3":"O###E"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: PointOnLineRelation{point=O, line=AC, isConstant=false, extension=false},SegmentRelation:OB,AngleBisectorRelation{line=OD,angle=∠AOB, angle1=∠AOD, angle2=∠BOD},EqualityRelation{∠BOE=(1/2)*∠COE},EqualityRelation{∠DOE=(7/18*Pi)},Calculation:AngleRelation{angle=∠COE},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]∠COE)}

792, topic: FIG, E is different from the known point B on side BC of the rectangle ABCD, C point, $ DF ⊥AE $ verify at point F.?#%#(1): $ △ABE∽ △DFA $;? #% # (2) when the $ AB =6 $, $ AD =12 $, $ BE =8 $, DF seeking long.



graph:
{"stem":{"pictures":[{"picturename":"1000004674_Q_1.jpg","coordinates":{"A":"-10.00,6.00","B":"-10.00,0.00","C":"2.00,0.00","D":"2.00,6.00","E":"0.00,0.00","F":"-1.18,0.71"},"collineations":{"0":"A###F###E","1":"A###D","2":"D###F","3":"D###C","4":"B###E###C","5":"A###B"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

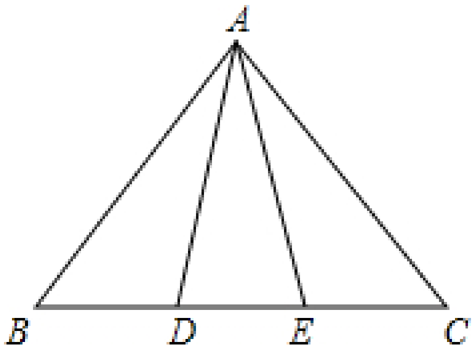
NLP: RectangleRelation{rectangle=Rectangle:ABCD},PointOnLineRelation{point=E, line=BC, isConstant=false, extension=false},LinePerpRelation{line1=DF, line2=AE, crossPoint=F},EqualityRelation{DF=v_0},EqualityRelation{AB=6},EqualityRelation{AD=12},EqualityRelation{BE=8},Calculation:(ExpressRelation:[key:]v_0),ProveConclusionRelation:[Proof: TriangleSimilarRelation{triangleA=△ABE, triangleB=△DFA}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]DF)}

793, topic: As shown, the side length of the square ABCD 9, a square folded with the apex of point E D falling edge of the BC, to fold when GH BE:. EC =2: 1, seeking EC line, CH long. #% # <img>

graph:

NLP: SquareRelation {square =Square: ABCD, length =9}, SquareRelation {square =Square: ABCD}, PointCoincidenceRelation {point1 =D, point2 =E}, PointOnLineRelation {point =E, line =BC, isConstant =false, extension =false}, SegmentRelation: GH, EqualityRelation {(BE) / (CE) =(2) / (1)}, evaluation (size) :(ExpressRelation: [key:] CE), evaluation (size) :(ExpressRelation: [key:] CH), SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] CE)}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] CH)}

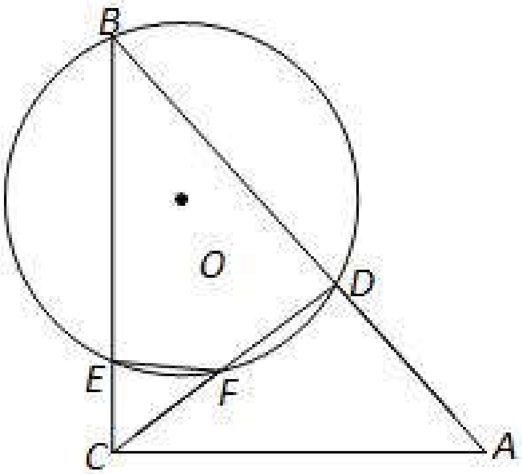
794, topic: FIG, points D, E on the side of the BC △ABC, AD =AE, BD =CE test described △ABC is an isosceles triangle #% # <img>..



graph:
{"stem":{"pictures":[{"picturename":"1000070798_Q_1.jpg","coordinates":{"A":"2.00,3.00","B":"0.00,0.00","C":"4.00,0.00","D":"1.00,0.00","E":"3.00,0.00"},"collineations":{"0":"B###D###E###C","1":"B###A","2":"D###A","3":"A###E","4":"A###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: PointOnLineRelation{point=D, line=BC, isConstant=false, extension=false},PointOnLineRelation{point=E, line=BC, isConstant=false, extension=false},TriangleRelation:△ABC,EqualityRelation{AD=AE},EqualityRelation{BD=CE},ProveConclusionRelation:[IsoscelesTriangleRelation:IsoscelesTriangle:△ABC[Optional.of(A)]]

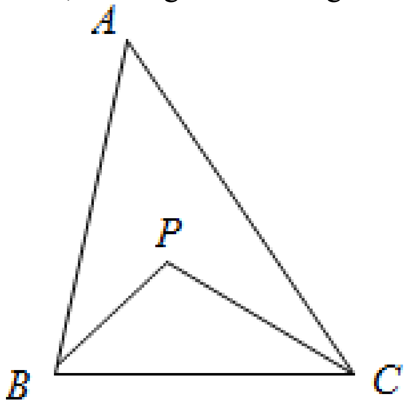
795, topic: Given: As shown, attached to the inner quadrangular $ \odot O $ BEFD, BE, DF extension lines cross between C, taken at point A of an extended line BD, so $ {{AC} ^ {2} .} =AD \cdot AB $ Proof: $ EF // AC $.



graph:
{"stem":{"pictures":[{"picturename":"B46AF1E706A54C7D83FEE4CFC819361E.jpg","coordinates":{"A":"-5.77,4.70","B":"-11.00,11.83","C":"-11.00,4.70","D":"-7.60,7.20","E":"-11.00,6.17","F":"-9.00,6.17","O":"-10.00,9.00"},"collineations":{"0":"B###A###D","1":"A###C","2":"B###E###C","3":"C###F###D","4":"F###E"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"B###D###E###F"}]}],"appliedproblems":{}},"substems":[]}

NLP: InscribedShapeOfCircleRelation{closedShape=BDFE, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}},LineCrossRelation [crossPoint=Optional.of(C), iLine1=BE, iLine2=DF],PointOnLineRelation{point=A, line=BD, isConstant=false, extension=true},EqualityRelation{((AC)^2)=AD*AB},ProveConclusionRelation:[Proof: LineParallelRelation [iLine1=EF, iLine2=AC]]

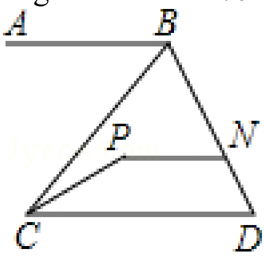
796, topic: As shown in the △ABC, ∠ABC =80 °, ∠ACB =50 °, BP equally ∠ABC, CP equally ∠ACB, seeking ∠BPC degree #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000038212_Q_1.jpg","coordinates":{"A":"0.86,4.90","B":"0.00,0.00","C":"4.97,0.00","P":"1.77,1.49"},"collineations":{"0":"A###B","1":"B###C","2":"C###A","3":"B###P","4":"C###P"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleRelation: △ABC, EqualityRelation {∠ABC =(4/9 * Pi)}, EqualityRelation {∠ACB =(5/18 * Pi)}, AngleBisectorRelation {line =BP, angle =∠ABC, angle1 =∠ABP , angle2 =∠CBP}, AngleBisectorRelation {line =CP, angle =∠ACB, angle1 =∠ACP, angle2 =∠BCP}, aNGULAR size: AngleRelation {angle =∠BPC}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] ∠BPC)}

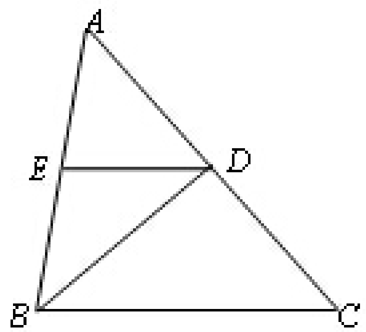
797, topic: FIG, AB // CD, ∠ABC =50 °, ∠CPN =150 °, ∠PNB =60 °, ∠NDC =60 °, the required degree ∠BCP #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"B54E7B2114F64E63A14E4EE7BC21B1D2.jpg","coordinates":{"A":"-15.00,7.00","B":"-11.00,7.00","C":"-13.52,4.00","D":"-9.27,4.00","P":"-11.60,5.11","N":"-9.91,5.11"},"collineations":{"0":"B###A","1":"B###N###D","2":"B###C","3":"C###P","4":"D###C","5":"P###N"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: LineParallelRelation [iLine1 =AB, iLine2 =CD], EqualityRelation {∠ABC =(5/18 * Pi)}, EqualityRelation {∠CPN =(5/6 * Pi)}, EqualityRelation {∠BNP =(1/3 * Pi)}, EqualityRelation {∠CDN =(1/3 * Pi)}, find the size of the angle: AngleRelation {angle =∠BCP}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] ∠ BCP)}

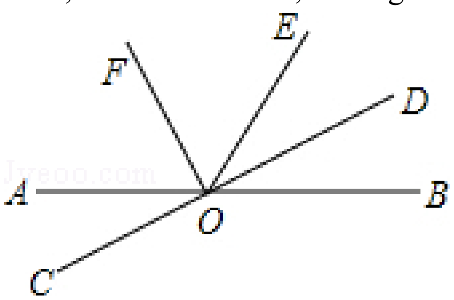
798, topic: As shown in the $ △ABC $, $ AB =BC =12cm $, $ ∠ABC =80 ° $, BD is the bisector $ ∠ABC $, $ DE // BC $ (1) requirements. $ ∠EDB $ degree;% # # (2) DE longer required.



graph:
{"stem":{"pictures":[{"picturename":"1000027589_Q_1.jpg","coordinates":{"A":"0.69,3.94","B":"0.00,0.00","C":"4.00,0.00","D":"2.35,1.97","E":"0.35,1.97"},"collineations":{"0":"A###E###B","1":"A###D###C","2":"B###C","3":"B###D","4":"D###E"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleRelation: △ABC, MultiEqualityRelation [multiExpressCompare =AB =BC =12, originExpressRelationList =[], keyWord =null, result =null], EqualityRelation {∠CBE =(4/9 * Pi)}, AngleBisectorRelation {line =BD , angle =∠CBE, angle1 =∠CBD, angle2 =∠DBE}, LineParallelRelation [iLine1 =DE, iLine2 =BC], find the size of the angle: AngleRelation {angle =∠BDE}, EqualityRelation {DE =v_0}, evaluation (size) :(ExpressRelation: [key:] v_0), SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] ∠BDE)}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] DE)}

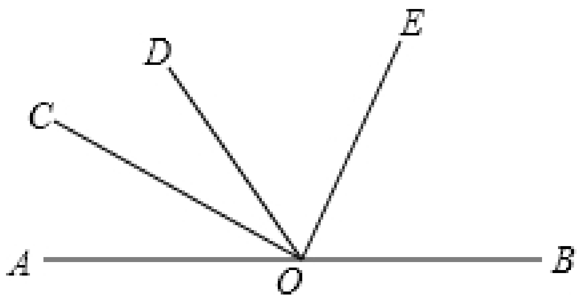
799, topic: As shown, the straight line AB, CD intersect at point O, ∠DOE =∠BOD, OF equally ∠AOE, if ∠AOC =28 °, the degree of seeking ∠EOF #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"4C2472CB293647B080FB80543C3B1F4A.jpg","coordinates":{"A":"-15.00,5.00","B":"-7.00,5.00","C":"-14.53,3.12","D":"-7.05,7.10","E":"-8.50,8.71","F":"-12.61,8.03","O":"-11.00,5.00"},"collineations":{"0":"B###A###O","1":"O###C###D","2":"O###E","3":"O###F"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: LineCrossRelation [crossPoint =Optional.of (O), iLine1 =AB, iLine2 =CD], EqualityRelation {∠DOE =∠BOD}, AngleBisectorRelation {line =OF, angle =∠AOE, angle1 =∠AOF, angle2 =∠ EOF}, EqualityRelation {∠AOC =(7/45 * Pi)}, find the size of the angle: AngleRelation {angle =∠EOF}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] ∠EOF) }

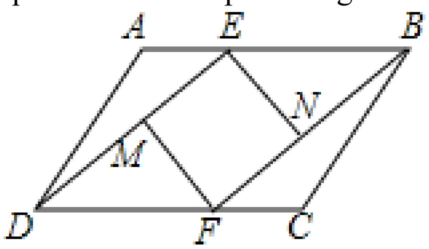
800, topic: FIG, AB is a straight line, OC is ∠AOD bisector, OE in ∠BOD, $ ∠DOE: ∠BOD =1: 3 $, ∠COE =72 °, the required degree ∠EOB. #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000072560_Q_1.jpg","coordinates":{"A":"0.00,0.00","B":"6.00,0.00","C":"0.57,1.76","D":"2.07,2.85","E":"3.93,2.85","O":"3.00,0.00"},"collineations":{"0":"A###O###B","1":"O###C","2":"O###D","3":"O###E"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: SegmentRelation: AB, AngleBisectorRelation {line =OC, angle =∠AOD, angle1 =∠AOC, angle2 =∠COD}, EqualityRelation {(∠DOE) / (∠BOD) =(1) / (3)}, EqualityRelation {∠COE =(2/5 * Pi)}, find the size of the angle: AngleRelation {angle =∠BOE}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] ∠BOE)}

801, topic: FIG, □ABCD in, AE =CF, M, N respectively, DE, BF midpoint Verification of: MFNE quadrilateral is a parallelogram #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"451B5296190444E9A13E40119DC06F49.jpg","coordinates":{"A":"-12.00,7.00","B":"-6.00,7.00","C":"-8.00,3.00","D":"-14.00,3.00","E":"-10.00,7.00","F":"-10.00,3.00","M":"-12.00,5.00","N":"-8.00,5.00"},"collineations":{"0":"A###D","1":"A###B###E","2":"M###E###D","3":"D###F###C","4":"B###C","5":"B###N###F","6":"E###N","7":"M###F"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: ParallelogramRelation{parallelogram=Parallelogram:ABCD},EqualityRelation{AE=CF},MiddlePointOfSegmentRelation{middlePoint=M,segment=DE},MiddlePointOfSegmentRelation{middlePoint=N,segment=BF},ProveConclusionRelation:[Proof: ParallelogramRelation{parallelogram=Parallelogram:EMFN}]

802, topic: 1, in the △OAB, ∠OAB =90 °, ∠AOB =30 °, OB =8 OB to as an edge, the outer △OAB as equilateral △OBC, D is the midpoint of OB. , $ AD =\ frac {1} {2} BO $, for extending connections AD and OC at point E #% # (1) Proof: ABCE quadrilateral is a parallelogram;% # # (2) in FIG. 2, the ABCO quadrilateral in FIG 1 is folded so that point C coincides with point a, the fold of FG, OG seeking long. #% # <img>

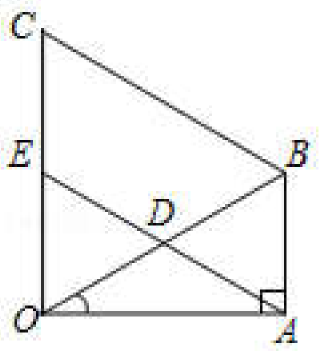


图1

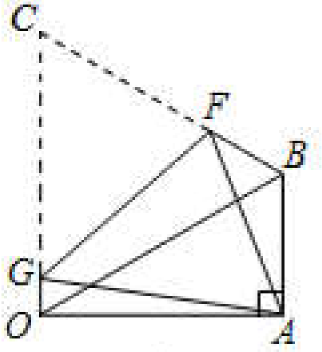
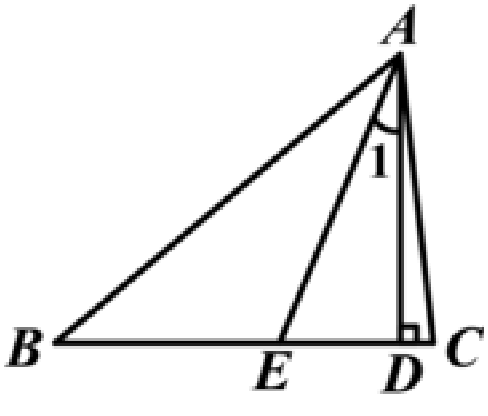


图2

graph:
{"stem":{"pictures":[{"picturename":"1000031864_Q_1.jpg","coordinates":{"A":"6.93,0.00","B":"6.93,4.00","C":"0.00,8.00","O":"0.00,0.00","E":"0.00,4.00","D":"3.46,2.00"},"collineations":{"0":"B###A","1":"B###C","2":"A###O","3":"O###C###E","4":"O###B###D","5":"D###E###A"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[{"substemid":"2","questionrelies":"","pictures":[{"picturename":"1000031864_Q_1.jpg","coordinates":{"F":"4.85,5.20","G":"0.00,1.00"},"collineations":{"0":"C###G###O","1":"G###A","2":"F###A","3":"C###F###B","4":"F###G"},"variable-equals":{},"circles":[]}],"appliedproblems":{}}]}

NLP: TriangleRelation:△OAB,EqualityRelation{∠BAO=(1/2*Pi)},EqualityRelation{∠AOD=(1/6*Pi)},EqualityRelation{BO=8},TriangleRelation:△OAB,RegularTriangleRelation:RegularTriangle:△OBC,MiddlePointOfSegmentRelation{middlePoint=D,segment=OB},EqualityRelation{AD=(1/2)*BO},LineCrossRelation [crossPoint=Optional.of(E), iLine1=AD, iLine2=OC],EqualityRelation{GO=v_0},(ExpressRelation:[key:]2),SymmetricRelation{preData=C,afterData=A,symmetric=StraightLine[FG] analytic :y=k_FG*x+b_FG slope:null b:null isLinearFunction:false, pivot=},Calculation:(ExpressRelation:[key:]v_0),ProveConclusionRelation:[Proof: ParallelogramRelation{parallelogram=Parallelogram:ABCE}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]GO)}

803, topic: As shown in the △ABC, ∠BAE =∠CAE, ∠ADC =90 °, ∠B =40 °, ∠C =84 ° #% # (1) the required degree ∠1; #%. # (2) to determine the shape of each triangle in FIG triangle by determining the maximum internal angle of degrees. #% # <img>

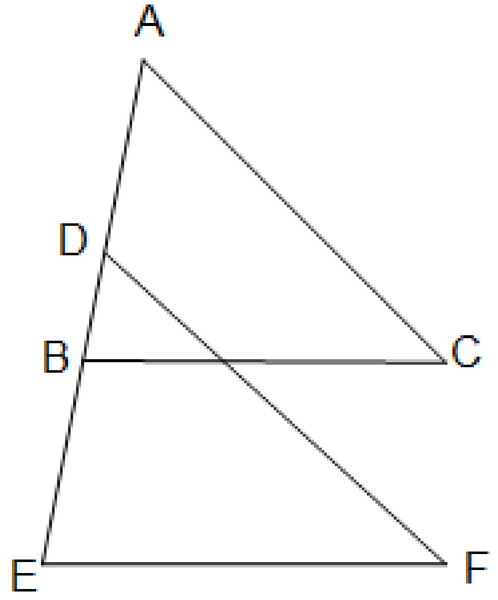


graph:
{"stem":{"pictures":[{"picturename":"B851B1C3A70C44F4B582DF9F722C8E64.jpg","coordinates":{"A":"-8.49,7.63","B":"-14.00,3.00","C":"-8.00,3.00","D":"-8.49,3.00","E":"-10.36,3.00"},"collineations":{"0":"B###A","1":"A###C","2":"A###D","3":"A###E","4":"B###C###D###E"},"variable-equals":{"0":"∠1=∠DAE"},"circles":[]}],"appliedproblems":{}},"substems":[{"substemid":"2","questionrelies":"1","pictures":[]

,"appliedproblems":{}}]}

NLP: TriangleRelation: △ABC, EqualityRelation {∠BAE =∠CAE}, EqualityRelation {∠ADC =(1/2 * Pi)}, EqualityRelation {∠ABE =(2/9 * Pi)}, EqualityRelation {∠ACD =(7/15 * Pi)}, find the size of the angle: (ExpressRelation: [key:] ∠DAE), SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] ∠DAE)}

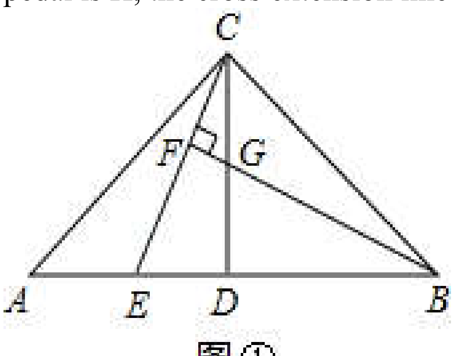
804, topic: FIG, points A, D, B, E in a straight line, and AC =DF, AD =BE, BC =EF Proof: ∠C =∠F #% # <img>.



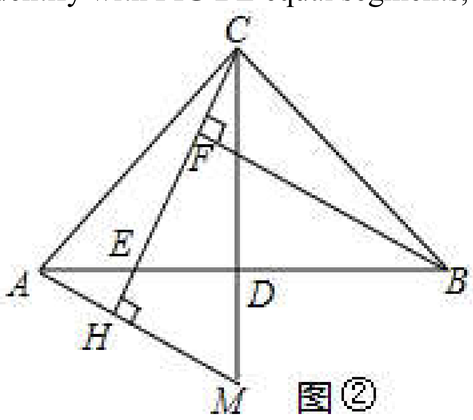
graph:
{"stem":{"pictures":[{"picturename":"1000072655_Q_1.jpg","coordinates":{"A":"-8.57,9.30","B":"-10.00,5.00","C":"-7.00,5.00","D":"-9.57,6.30","E":"-11.00,2.00","F":"-8.00,2.00"},"collineations":{"0":"A###C","1":"D###F","2":"B###C","3":"E###F","4":"A###D###B###E"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: MultiPointCollinearRelation:[A, D, B, E],EqualityRelation{AC=DF},EqualityRelation{AD=BE},EqualityRelation{BC=EF},ProveConclusionRelation:[Proof: EqualityRelation{∠ACB=∠DFE}]

805, topic: is known: In the △ABC, AC =BC, ∠ACB =90 °, the point D is the midpoint of AB, the point E is a point on the edge AB #% # (1) perpendicular to the straight line CE to BF. point F, at point cross CD G (FIG ①), Proof: AE =CG; at point M (FIG ②) #% # (2) perpendicular to the straight line AH CE, pedal is H, the cross extension line CD identify with FIG BE equal segments, and description. #% # <img>



图①

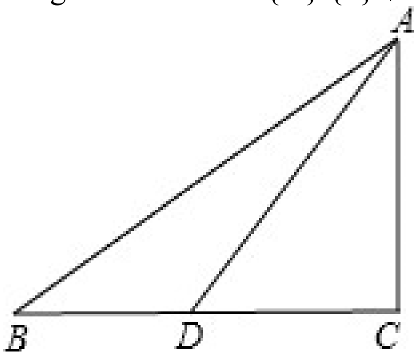


图②

graph:
{"stem":{"pictures":[{"picturename":"1000050449_Q_1.jpg","coordinates":{"A":"-3.84,2.54","B":"2.56,2.54","C":"-0.84,5.54","D":"-0.84,2.54","E":"-1.98,2.54","F":"-1.45,3.92","G":"-0.84,3.69"},"collineations":{"0":"A###E###D###B","1":"C###A","2":"E###F###C","3":"C###D###G","4":"G###F###B","5":"C###B"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[{"substemid":"1","questionrelies":"","pictures":[],"appliedproblems":{}},{"substemid":"2","questionrelies":"","pictures":[{"picturename":"1000050449_Q_1.jpg","coordinates":{"H":"-2.22,1.92","M":"-0.84,1.39"},"collineations":{"0":"A###H###M","1":"E###F###C###H","2":"C###D###G###M"},"variable-equals":{},"circles":[]}],"appliedproblems":{}}]}

NLP: TriangleRelation:△ABC,EqualityRelation{AC=BC},EqualityRelation{∠ACB=(1/2*Pi)},MiddlePointOfSegmentRelation{middlePoint=D,segment=AB},PointOnLineRelation{point=E, line=AB, isConstant=false, extension=false},LinePerpRelation{line1=BF, line2=CE, crossPoint=F},LinePerpRelation{line1=AH, line2=CE, crossPoint=H},LineCrossRelation[crossPoint=Optional.of(M), iLine1=AH, iLine2=CD]

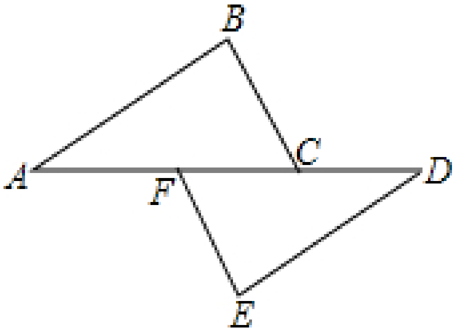
806, topic: As shown in the $ △ABC $, $ ∠C =90 ° $, point D on BC, $ BD =4 $, $ AD =BC $, $ \ cos \ angle ADC =\ frac { 3} {5} $ requirements: #% # (1) DC length;% # # (2) $ \ sin B $ value of??.



graph:
{"stem":{"pictures":[{"picturename":"1000007591_Q_1.jpg","coordinates":{"A":"0.00,8.00","B":"-10.00,0.00","C":"0.00,0.00","D":"-6.00,0.00"},"collineations":{"0":"A###D","1":"A###B"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleRelation: △ABC, EqualityRelation {∠C =(1/2 * Pi)}, PointOnLineRelation {point =D, line =BC, isConstant =false, extension =false}, EqualityRelation {BD =4}, EqualityRelation {AD =BC}, EqualityRelation {cos (∠ADC) =(3/5)}, EqualityRelation {CD =v_0}, evaluation (size) :(ExpressRelation: [key:] v_0), evaluation (size) :(ExpressRelation : [key:] sin (∠B)), SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] CD)}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] sin (∠B))}

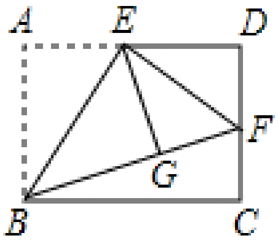
807, topic:. As shown, point A, F, C, D in the same line, points B and E, respectively, on both sides of the straight line AD and AB =DE, ∠A =∠D, AF =DC test described :. BC // EF #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"C242FD0D2E964F3D98304042EF088C39.jpg","coordinates":{"A":"-14.00,5.00","B":"-11.00,8.00","C":"-10.00,5.00","D":"-7.00,5.00","E":"-10.00,2.00","F":"-11.00,5.00"},"collineations":{"0":"B###A","1":"A###F###D###C","2":"C###B","3":"E###D","4":"E###F"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: PointRelation:A,PointRelation:F,PointRelation:C,PointOnLineDifferentSideRelation{point1=B, point2=E, line=AD},EqualityRelation{AB=DE},EqualityRelation{∠BAF=∠CDE},EqualityRelation{AF=CD},ProveConclusionRelation:[Proof: LineParallelRelation [iLine1=BC, iLine2=EF]]

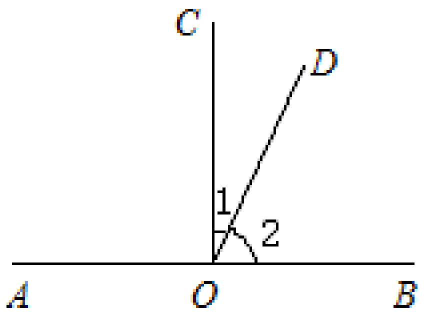
808, topic: FIG rectangle ABCD, E is the midpoint of AD, △ABE after folding along the line BE to give △GBE, extended delivery BG CD (1) to verify the point F #% #:. DF =GF; #% # (2) If AB =6, $ {BC} ^ {2} =96 $, DF seeking long. #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000080265_Q_1.jpg","coordinates":{"A":"-3.00,2.00","B":"-3.00,0.00","C":"0.27,0.00","D":"0.27,2.00","E":"-1.37,2.00","F":"0.27,0.67","G":"-1.04,0.40"},"collineations":{"0":"A###E###D","1":"B###C","2":"A###B","3":"C###F###D","4":"B###G###F","5":"B###E","6":"G###E","7":"F###E"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: RectangleRelation{rectangle=Rectangle:ABCD},MiddlePointOfSegmentRelation{middlePoint=E,segment=AD},TurnoverRelation{start=A, segment=BE,target=G},LineCrossRelation [crossPoint=Optional.of(F), iLine1=BG, iLine2=CD],EqualityRelation{DF=v_0},EqualityRelation{AB=6},EqualityRelation{(BC)^2=96},Calculation:(ExpressRelation:[key:]v_0),ProveConclusionRelation:[Proof: EqualityRelation{DF=FG}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]DF)}

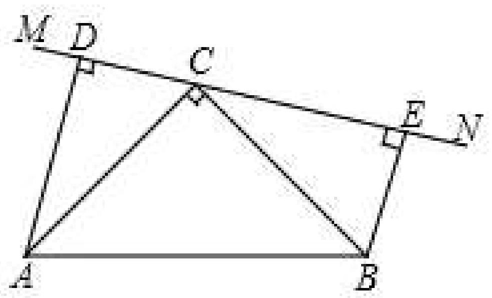
809, topic: FIG point O on the straight line AB, CO⊥AB, ∠2-∠1 =34 ° degree seeking ∠AOD #% # <img>..



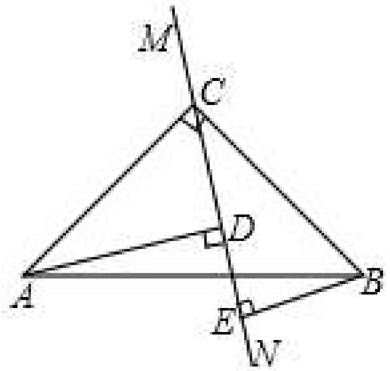
graph:
{"stem":{"pictures":[{"picturename":"1000051544_Q_1.jpg","coordinates":{"A":"-7.73,0.79","B":"-1.08,0.90","C":"-4.47,4.13","D":"-2.93,3.76","O":"-4.42,0.85"},"collineations":{"0":"O###C","1":"O###D","2":"A###O###B"},"variable-equals":{"0":"∠1=∠COD","1":"∠2=∠BOD"},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: PointOnLineRelation {point =O, line =AB, isConstant =false, extension =false}, LinePerpRelation {line1 =CO, line2 =AB, crossPoint =O}, EqualityRelation {∠BOD-∠COD =(17/90 * Pi)}, find the size of the angle: AngleRelation {angle =∠AOD}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] ∠AOD)}

810, topic: in the △ABC, ∠ACB =90 °, AC =BC, line MN through points C, and AD⊥MN in D, BE ⊥MN in E, #% # (1) Proof: DE =AD + BE; #% # (2) when rotated to the position of FIG line MN ② around point C, the remaining conditions remain unchanged, the (1) conclusions also set it if established, give proof;? If established, ask DE , AD, how to BE a relationship? #% # <img>



图①



图②

graph:
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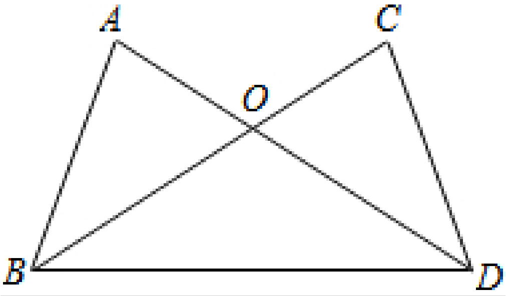
NLP: TriangleRelation:△ABC,EqualityRelation{∠ACB=(1/2*Pi)},EqualityRelation{AC=BC},PointOnLineRelation{point=C, line=MN, isConstant=false, extension=false},LinePerpRelation{line1=AD, line2=MN, crossPoint=D},LinePerpRelation{line1=BE,

line2=MN,
crossPoint=E},Calculation:(ExpressRelation:[key:](DE/AD)),Calculation:(ExpressRelation:[key:](AD/BE)),
ProveConclusionRelation:[Proof:
EqualityRelation{DE=AD+BE}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:](DE/AD))},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:](AD/BE))}

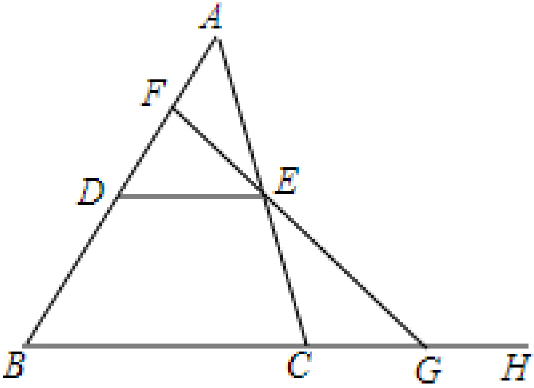
811, topic: FIG, AD, BC intersect at O, OA =OC, ∠OBD =∠ODB Proof:. AB =CD #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000035913_Q_1.jpg","coordinates":{"A":"-2.74,4.18","B":"-4.15,0.66","C":"0.69,4.18","D":"2.10,0.66","O":"-1.03,2.94"},"collineations":{"0":"B###A","1":"A###O###D","2":"B###D","3":"D###C","4":"B###O###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: LineCrossRelation [crossPoint=Optional.of(O), iLine1=AD, iLine2=BC],EqualityRelation{AO=CO},EqualityRelation{∠DBO=∠BDO},ProveConclusionRelation:[Proof: EqualityRelation{AB=CD}]

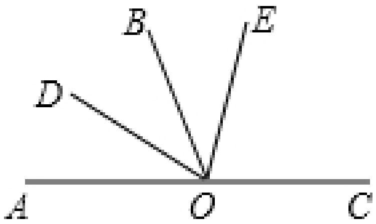
812, topic: Given: FIG, points D, E respectively AB, the AC, DE∥BC, F is a point on the AD, the FE extension lines cross the extension line BC at point verify G.: #% # (1) ∠EGH＞∠ADE;. #% # (2) ∠EGH =∠ADE + ∠A + ∠AEF #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000070798_Q_1.jpg","coordinates":{"A":"2.99,4.97","B":"0.00,0.00","C":"4.97,0.00","D":"1.20,2.00","E":"4.18,2.00","F":"2.40,4.00","G":"5.95,0.00","H":"8.00,0.00"},"collineations":{"0":"B###D###F###A","1":"B###C###G###H","2":"C###E###A","3":"F###E###G","4":"D###E"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: PointOnLineRelation{point=D, line=AB, isConstant=false, extension=false},PointOnLineRelation{point=E, line=AC, isConstant=false, extension=false},LineParallelRelation [iLine1=DE, iLine2=BC],PointOnLineRelation{point=F, line=AD, isConstant=false, extension=false},LineCrossRelation [crossPoint=Optional.of(G), iLine1=FE, iLine2=BC],ProveConclusionRelation:[Proof: InequalityRelation{∠EGH>∠EDF}],ProveConclusionRelation:[Proof: EqualityRelation{∠EGH=∠EDF+∠EAF+∠AEF}]

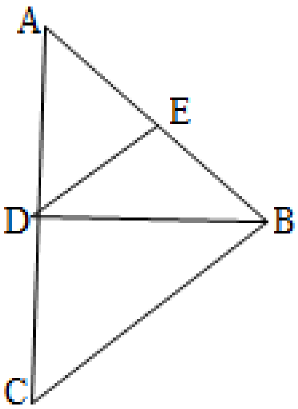
813, topic: known ∠AOB + ∠BOC =180 °, OD is the bisector of ∠ AOB, OE in ∠BOC, ∠BOE =$ \ frac {1} {2} $ ∠EOC, ∠DOE =72 °, seeking ∠EOC degree. #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000081140_Q_1.jpg","coordinates":{"A":"3.00,3.00","B":"6.12,8.78","C":"13.00,3.00","D":"3.08,6.57","E":"9.88,8.78","O":"8.00,3.00"},"collineations":{"0":"B###O","1":"A###O","2":"O###C","3":"O###D","4":"O###E"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: EqualityRelation {∠AOB + ∠BOC =(Pi)}, AngleBisectorRelation {line =OD, angle =∠AOB, angle1 =∠AOD, angle2 =∠BOD}, EqualityRelation {∠BOE =(1/2) * ∠COE} , EqualityRelation {∠DOE =(2/5 * Pi)}, find the size of the angle: AngleRelation {angle =∠COE}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] ∠COE)}

814, topic: As shown in the △ABC, AB =BC =12cm, ∠ABC =80 °, BD is the bisector ∠ABC, DE // BC seeking: #% # (1) ∠EDB degree; #. % # (2) DE long. #% # <img>

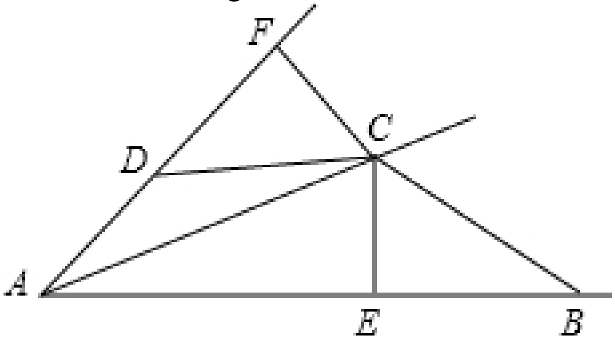


graph:
{"stem":{"pictures":[{"picturename":"1000063476_Q_1.jpg","coordinates":{"A":"2.28,3.52","B":"4.41,1.44","C":"2.28,-0.09","D":"2.28,1.44","E":"3.50,2.32"},"collineations":{"0":"C###A###D","1":"B###A###E","2":"E###D","3":"B###D","4":"C###B"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleRelation: △ABC, MultiEqualityRelation [multiExpressCompare =AB =BC =12, originExpressRelationList =[], keyWord =null, result =null], EqualityRelation {∠CBE =(4/9 * Pi)}, AngleBisectorRelation {line =BD , angle =∠CBE, angle1 =∠CBD, angle2 =∠DBE}, LineParallelRelation [iLine1 =DE, iLine2 =BC], find the size of the angle: AngleRelation {angle =∠BDE}, EqualityRelation {DE =v_0}, evaluation (size) :(ExpressRelation: [key:] v_0), SolutionConclusionRelation {relation

=evaluator (size) :(ExpressRelation: [key:] ∠BDE)}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] DE)}

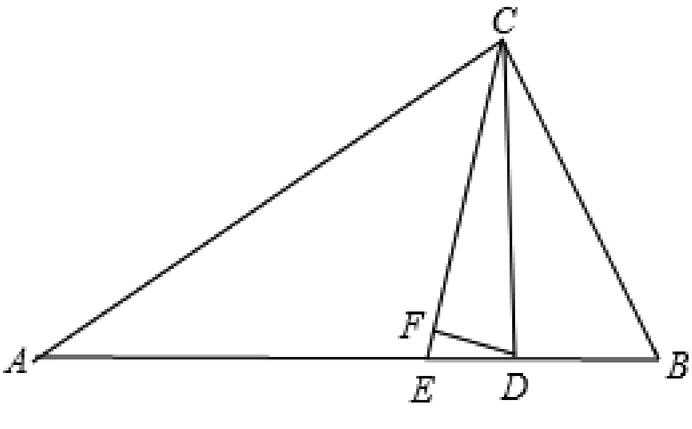
815, topic: FIG known AC bisecting ∠BAD, CF⊥AD in F, CE⊥AB in E, DC =BC Proof:. △BCE≌△DCF #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000030793_Q_1.jpg","coordinates":{"A":"-10.00,0.00","B":"-1.00,0.00","C":"-4.34,2.34","D":"-8.36,1.64","E":"-4.34,0.00","F":"-6.00,4.00"},"collineations":{"0":"A###D###F","1":"A###C","2":"A###E###B","3":"F###C","4":"D###C","5":"E###C","6":"B###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: AngleBisectorRelation{line=AC,angle=∠DAE, angle1=∠CAD, angle2=∠CAE},LinePerpRelation{line1=CF, line2=AD, crossPoint=F},LinePerpRelation{line1=CE, line2=AB, crossPoint=E},EqualityRelation{CD=BC},ProveConclusionRelation:[Proof: TriangleCongRelation{triangleA=△BCE, triangleB=△DCF}]

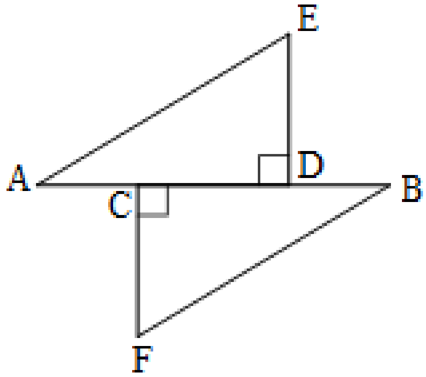
816, topic: (1) As shown, △ABC medium, ∠A =40 °, ∠B =72 °, CE equally ∠ACB, CD⊥AB in D, DF⊥CE in F, the required degree ∠CDF; # % # (2) (1), when ∠A =α, ∠B =β (α ≠ β), other things being equal, the degree of seeking ∠CDF. (beta] and [alpha] containing this algebraic representation) #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"C8FD2E4FA6E7455EAC3B3FB5FBDA3872.jpg","coordinates":{"A":"-14.00,3.00","B":"-5.00,3.00","C":"-6.93,8.93","D":"-6.93,3.00","E":"-8.63,3.00","F":"-8.50,3.45"},"collineations":{"0":"B###D###E###A","1":"C###A","2":"B###C","3":"C###D","4":"C###F###E","5":"F###D"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleRelation: △ABC, EqualityRelation {∠CAE =(2/9 * Pi)}, EqualityRelation {∠CBD =(2/5 * Pi)}, AngleBisectorRelation {line =CE, angle =∠ACB, angle1 =∠ACE , angle2 =∠BCE}, LinePerpRelation {line1 =CD, line2 =AB, crossPoint =D}, LinePerpRelation {line1 =DF, line2 =CE, crossPoint =F}, aNGULAR size: AngleRelation {angle =∠CDF}, EqualityRelation {∠CAE =α}, EqualityRelation {∠CBD =β, Condition: [[α ≠ β]]}, aNGULAR size: AngleRelation {angle =∠CDF}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] ∠CDF)}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] ∠CDF)}

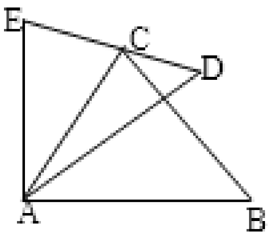
817, topic: Known: As shown, ED⊥AB, FC⊥AB, pedal are D, C, AE∥BF, and AE =BF confirmation AC =BD #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000061414_Q_1.jpg","coordinates":{"A":"4.00,4.00","B":"11.00,4.00","C":"6.00,4.00","D":"9.00,4.00","E":"9.00,7.00","F":"6.00,1.00"},"collineations":{"0":"A###E","1":"E###D","2":"A###C###D###B","3":"B###F","4":"F###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: LinePerpRelation{line1=ED, line2=AB, crossPoint=D},LinePerpRelation{line1=FC, line2=AB, crossPoint=C},LineParallelRelation [iLine1=AE, iLine2=BF],EqualityRelation{AE=BF},ProveConclusionRelation:[Proof: EqualityRelation{AC=BD}]

818, topic: Given: FIG, AE =AC, AD =AB, ∠EAC =∠DAB, Proof: . △EAD≌ △CAB #% # <img>

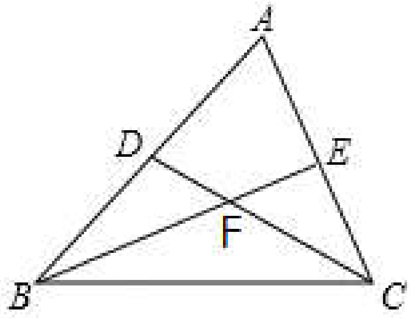


图

graph:
{"stem":{"pictures":[{"picturename":"1000040175_Q_1.jpg","coordinates":{"A":"0.00,0.00","B":"3.78,0.00","C":"1.45,2.40","D":"3.23,1.96","E":"0.00,2.80"},"collineations":{"0":"A###B","1":"B###C","2":"C###A","3":"E###A","4":"A###D","5":"D###C###E"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: EqualityRelation{AE=AC},EqualityRelation{AD=AB},EqualityRelation{∠CAE=∠BAD},ProveConclusionRelation:[Proof: TriangleCongRelation{triangleA=△EAD, triangleB=△CAB}]

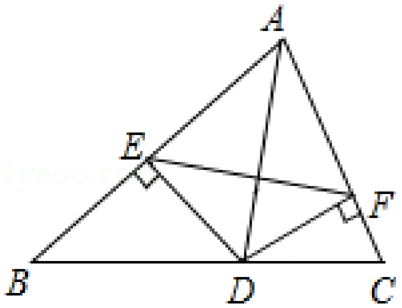
819, topic: As shown in the △ABC, ∠ABC, ∠ACB bisector BE, CD intersect at point F, ∠A =60 °, the degree of seeking ∠BFC #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"C9AEE7F697A34404B9FD7BA791513221.jpg","coordinates":{"A":"-11.00,7.00","B":"-15.00,4.00","C":"-10.64,4.00","D":"-12.64,5.77","E":"-10.81,5.40","F":"-11.83,5.06"},"collineations":{"0":"B###D###A","1":"C###E###A","2":"B###C","3":"C###F###D","4":"B###F###E"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleRelation:△ABC,AngleBisectorRelation{line=BE,angle=∠CBD, angle1=∠CBE, angle2=∠DBE},AngleBisectorRelation{line=CD,angle=∠BCE, angle1=∠BCD, angle2=∠DCE},LineCrossRelation [crossPoint=Optional.of(F), iLine1=BE, iLine2=CD],EqualityRelation{∠DAE=(1/3*Pi)},Calculation:AngleRelation{angle=∠BFC},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]∠BFC)}

820, topic: FIG, AD is the bisector of △ABC, DE, DF are the ABD and △△higher the ACD #% # (1) if DE =5, AC =8, the ADC find △area;. #% # (2) Proof: AD perpendicular bisector EF #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000041862_Q_1.jpg","coordinates":{"A":"-5.27,4.87","B":"-8.00,2.00","C":"-4.00,2.00","D":"-5.77,2.00","E":"-6.94,3.12","F":"-4.29,2.65"},"collineations":{"0":"A###E###B","1":"B###D###C","2":"C###F###A","3":"A###D","4":"D###E","5":"D###F","6":"E###F"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

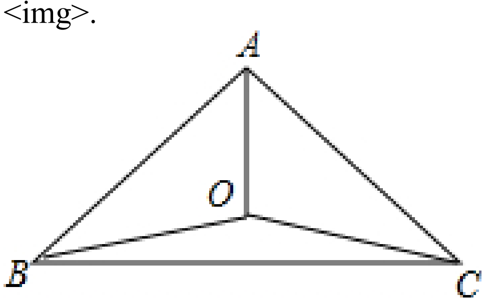
NLP: TriangleRelation:△ABC,TriangleRelation:△ABD,TriangleRelation:△ACD,AngleBisectorRelation{line=AD,angle=∠EAF, angle1=∠DAF, angle2=∠DAE},LinePerpRelation{line1=DE, line2=BE, crossPoint=E},LinePerpRelation{line1=DF, line2=AF, crossPoint=F},EqualityRelation{S_△ACD=v_0},EqualityRelation{DE=5},EqualityRelation{AC=8},Calculation:(ExpressRelation:[key:]v_0),SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]S_△ACD)},ProveConclusionRelation:[MiddlePerpendicularRelation [iLine1=AD, iLine2=EF, crossPoint=Optional.absent()]]

821, topic: FIG known segment AB =8cm, AB is the point C at any point, the point M, N is the midpoint of AC and CB, respectively, find the length of the MN #% # <img>.

graph:
{"stem":{"pictures":[{"picturename":"1000081139_Q_1.jpg","coordinates":{"A":"1.00,2.00","B":"9.00,2.00","C":"5.85,2.00","M":"3.43,2.00","N":"7.43,2.00"},"collineations":{"0":"A###M###C###N###B"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: EqualityRelation{MN=v_0},EqualityRelation{AB=8},PointOnLineRelation{point=C, line=AB, isConstant=false, extension=false},MiddlePointOfSegmentRelation{middlePoint=M,segment=AC},MiddlePointOfSegmentRelation{middlePoint=N,segment=CB},Calculation:(ExpressRelation:[key:]v_0),SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]MN)}

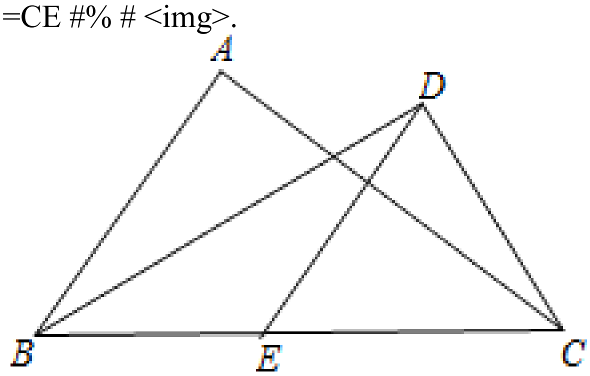
822, topic: FIG known that AB =AC, BO =CO, ∠BOC =160 °, the required degree ∠AOB #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000063502_Q_1.jpg","coordinates":{"A":"6.74,2.30","B":"4.79,0.45","C":"8.68,0.45","O":"6.74,0.79"},"collineations":{"0":"B###C","1":"B###A","2":"A###C","3":"O###A","4":"O###B","5":"O###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: EqualityRelation {AB =AC}, EqualityRelation {BO =CO}, EqualityRelation {∠BOC =(8/9 * Pi)}, find the size of the angle: AngleRelation {angle =∠AOB}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] ∠AOB)}

823, topic: FIG: In the △ABC, BD equally ∠ABC, BD⊥CD in D, DE∥AB BC at E, confirmation BE =CE #% # <img>.

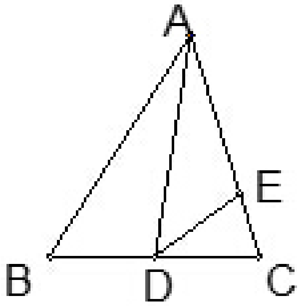


graph:
{"stem":{"pictures":[{"picturename":"1000050021_Q_1.jpg","coordinates":{"A":"-6.48,4.87","B":"-8.00,2.00","C":"-2.00,2.00","D":"-3.60,4.65","E":"-5.00,2.00"},"collineations":{"0":"A###B","1":"B###E###C","

2":"A###C","3":"D###E","4":"D###C","5":"D###B"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleRelation:△ABC,AngleBisectorRelation{line=BD,angle=∠ABE, angle1=∠ABD, angle2=∠DBE},LinePerpRelation{line1=BD, line2=CD, crossPoint=D},LineParallelRelation [iLine1=DE, iLine2=AB],LineCrossRelation [crossPoint=Optional.of(E), iLine1=DE, iLine2=BC],ProveConclusionRelation:[Proof: EqualityRelation{BE=CE}]

824, topic: FIG., It is known $ \ vartriangle ABC $ in, $ is the AD $ $ \ angle BAC $ bisector point at $ E $ $ $ side of the AC, and $ \ angle AED =\ angle ADB $. Proof: (1) $ \ vartriangle ABD \ sim \ vartriangle ADE $; #% # (2) $ {{AD} ^ {2}} =AB \ cdot AE $.



graph:
{"stem":{"pictures":[{"picturename":"1000010791_Q_1.jpg","coordinates":{"A":"-3.84,5.93","B":"-8.44,-0.53","C":"-3.32,-0.68","D":"-5.65,-0.61","E":"-3.38,0.13"},"collineations":{"0":"B###C###D","1":"A###C###E","2":"A###D","3":"A###B"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[{"substemid":"1","questionrelies":"2","pictures":[],"appliedproblems":{}},{"substemid":"2","questionrelies":"1","pictures":[],"appliedproblems":{}}]}

NLP: TriangleRelation:△ABC,AngleBisectorRelation{line=AD,angle=∠BAE, angle1=∠BAD, angle2=∠DAE},PointOnLineRelation{point=E, line=AC, isConstant=false, extension=false},EqualityRelation{∠AED=∠ADB},ProveConclusionRelation:[Proof: TriangleSimilarRelation{triangleA=△ABD, triangleB=△ADE}],ProveConclusionRelation:[Proof: EqualityRelation{((AD)^2)=AB*AE}]

825, topic: FIG, $ AB =AE $, $ AC =AD $, $ BC =DE $, C, D at the edge BE Proof: $ \ Angle CAE =\ angle DAB $.

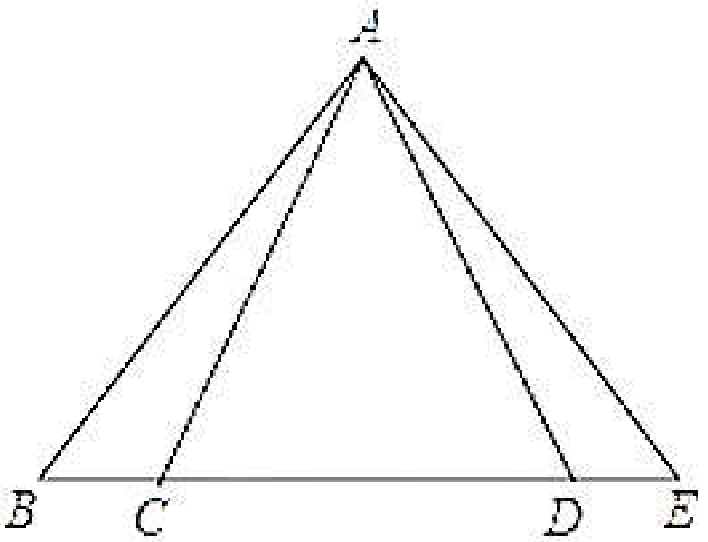
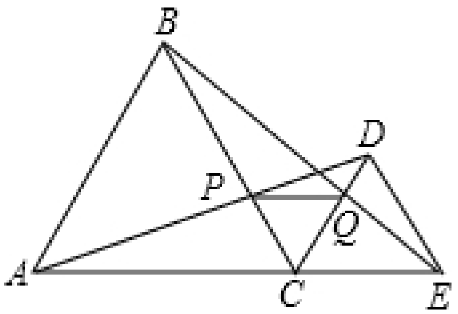


图 4-3-18

graph:
{"stem":{"pictures":[{"picturename":"1000004345_Q_1.jpg","coordinates":{"A":"-6.98,7.01","B":"-9.00,4.00","C":"-7.98,4.00","D":"-5.97,4.02","E":"-4.95,4.02"},"collineations":{"0":"B###C###D###E","1":"A###D","2":"A###C","3":"A###B","4":"A###E"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP:
EqualityRelation{AB=AE},EqualityRelation{AC=AD},EqualityRelation{BC=DE},PointRelation:C,PointOnLineRelation{point=D, line=BE, isConstant=false, extension=false},ProveConclusionRelation:[Proof: EqualityRelation{∠CAE=∠BAD}]

826, topic: FIG, C is a fixed point on the line segment AE (not the point A, E coincide), in the same side as each AE △ABC isosceles or equilateral △CDE, AD and BC intersect at the point P, BE and CD at point Q, PQ connection Proof: △PCQ equilateral triangle #% # <img>.

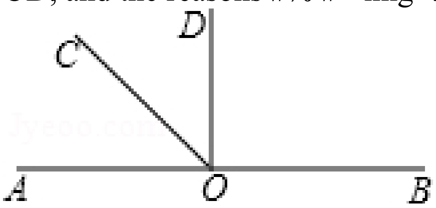


graph:
{"stem":{"pictures":[{"picturename":"1000038156_Q_1.jpg","coordinates":{"A":"-00,0.00","B":"3.00,5.20","C":"6.00,0.00","D":"8.00,3.46","E":"10.00,0.00","P":"4.80,2.08","Q":"7.20,2.08"},"collineations":{"0":"A###B","1":"D###E","2":"P###Q","3":"A###C###E","4":"B###P###C","5":"A###P###D","6":"C###Q###D","7":"B###Q###E"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: PointRelation:A,PointRelation:E,PointOnLineRelation{point=C, line=AE, isConstant=false, extension=false},RegularTriangleRelation:RegularTriangle:△ABC,RegularTriangleRelation:RegularTriangl

e:△CDE,SegmentRelation:AE,LineCrossRelation [crossPoint=Optional.of(P), iLine1=AD, iLine2=BC],LineCrossRelation [crossPoint=Optional.of(Q), iLine1=BE, iLine2=CD],SegmentRelation:PQ,ProveConclusionRelation:[Proof: RegularTriangleRelation:RegularTriangle:△PCQ]

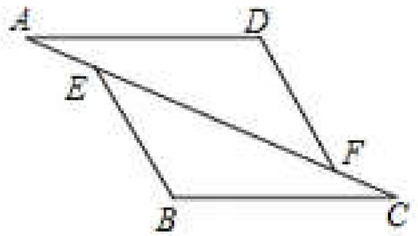
827, topic: FIG, O is little, $ \ angle AOC =\ frac {1} {3} \ angle BOC $ on the straight line AB, OC is ∠AOD bisector% # # (1) find ∠COD. degree; #% # positional relationship (2) again and determined AB, OD, and the reasons #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000081849_Q_1.jpg","coordinates":{"A":"-2.00,0.00","B":"2.00,0.00","C":"-2.00,2.00","D":"0.00,2.00","O":"0.00,0.00"},"collineations":{"0":"A###O###B","1":"O###C","2":"O###D"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: PointOnLineRelation{point=O, line=AB, isConstant=false, extension=false},EqualityRelation{∠AOC=(1/3)*∠BOC},AngleBisectorRelation{line=OC,angle=∠AOD, angle1=∠AOC, angle2=∠COD},Calculation:AngleRelation{angle=∠COD},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]∠COD)},JudgePostionConclusionRelation: [data1=OD, data2=AB]

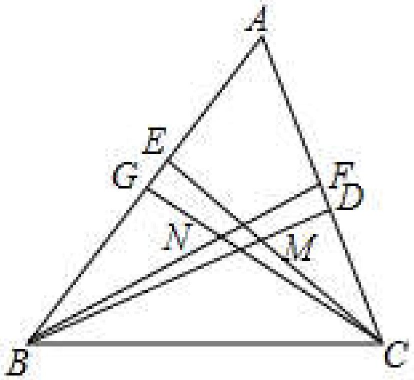
828, topic: FIG, is known: the △AFD and △CEB, the points A, E, F, C in the same line, AE =CF, ∠B =∠D, AD∥BC Proof: AD =BC . #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"D53F8F576F394BEFB5C286E777EDE1B6.jpg","coordinates":{"A":"-15.00,7.00","B":"-13.00,3.00","C":"-10.00,3.00","D":"-12.00,7.00","E":"-13.95,6.16","F":"-11.05,3.84"},"collineations":{"0":"D###A","1":"A###E###F###C","2":"B###C","3":"B###E","4":"F###D"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleRelation:△AFD,TriangleRelation:△CEB,PointRelation:A,PointRelation:E,PointRelation:F,EqualityRelation{AE=CF},EqualityRelation{∠CBE=∠ADF},LineParallelRelation [iLine1=AD, iLine2=BC],ProveConclusionRelation:[Proof: EqualityRelation{AD=BC}]

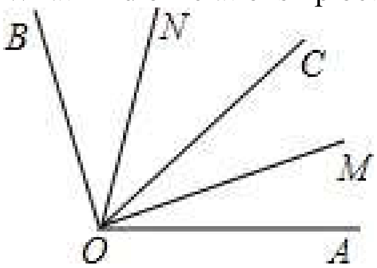
829, topic: the acute angle △ABC, the BD and CE are two high at point M, BF and CG are two angle bisector, at point N, if ∠BMC =100 ° #% # :(requirements. 1) ∠A degree;. #% # (2) ∠BNC degree #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"28.jpg","coordinates":{"A":"-12.00,7.00","B":"-15.00,2.00","C":"-4.98,0.90","D":"-9.43,4.77","E":"-12.83,5.61","F":"-11.24,6.34","G":"-13.44,4.60","M":"-12.20,5.23","N":"-11.48,3.75"},"collineations":{"0":"A###F###D###C","1":"E###M###C","2":"G###N###C","3":"A###E###G###B","4":"B###M###F","5":"B###N###D","6":"C###B"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: AcuteTriangleRelation:AcuteTriangle:△ABC,LineRoleRelation{Segment=BD, roleType=HEIGHT},LineCrossRelation [crossPoint=Optional.of(M), iLine1=BD, iLine2=CE],LineCrossRelation [crossPoint=Optional.of(N), iLine1=BF, iLine2=CG],EqualityRelation{∠BMC=(5/9*Pi)},LinePerpRelation{line1=CE, line2=BE, crossPoint=E},AngleBisectorRelation{line=BF,angle=∠GBN, angle1=∠FBG, angle2=∠FBN},AngleBisectorRelation{line=CG,angle=∠BCD, angle1=∠BCG, angle2=∠DCG},Calculation:AngleRelation{angle=∠BNC},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]∠BNC)}

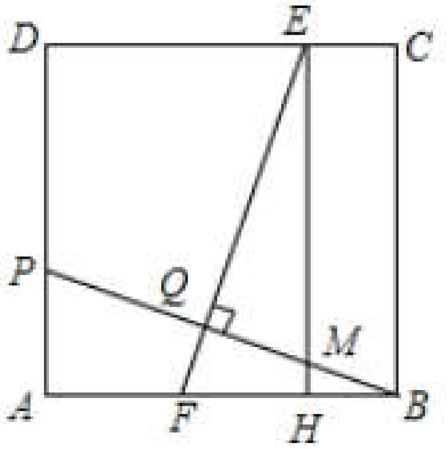
830, topic:.? As shown, OM \$ a \$ ∠AOC bisector, ON ∠BOC is \$ # \$% # bisector (1) if \$ ∠AOC =28 ° \$, \$ ∠MON =35 ° \$ obtains degrees \$ \$ ∠ AOB.? #% # (2) if \$ ∠MON =72 ° \$, \$ ∠ AOB \$ determined degree.? #% # (3) if the size change \$ ∠MON \$, \$ ∠AOB \$ whether the size will change? What kind of relationship between the size of them? Please write.



graph:
{"stem":{"pictures":[],"appliedproblems":{}},"substems":[{"substemid":"1","questionrelies":"","pictures":[{"picturename":"1000021452_Q_1.jpg","coordinates":{"A":"5.00,0.00","B":"1.71,4.69","C":"4.41,2.35","M":"5.39,1.34","N":"3.90,4.49","O":"0.00,0.00"},"collineations":{"0":"N###O","1":"M###O","2":"C###O","3":"O###B","4":"A###O"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},{"substemid":"2","questionrelies":"","pictures":[{"picturename":"4.4_15(2).jpg","coordinates":{"A":"5.00,0.00","B":"-4.04,2.94","C":"3.48,3.48","M":"4.97,2.06","N":"-0.41,5.27","O":"0.00,0.00"},"collineations":{"0":"N###O","1":"M###O","2":"C###O","3":"O###B","4":"O###A"},"variable-equals":{},"circles":[]}],"appliedproblems":{}}]}

NLP: AngleBisectorRelation {line =OM, angle =∠AOC, angle1 =∠AOM, angle2 =∠COM}, AngleBisectorRelation {line =ON, angle =∠BOC, angle1 =∠BON, angle2 =∠CON}, EqualityRelation {∠AOC =(7/45 * Pi)}, EqualityRelation {∠MON =(7/36 * Pi)}, find the size of the angle: AngleRelation {angle =∠AOB}, EqualityRelation {∠MON =(2/5 * Pi)} , find the size of the angle: AngleRelation {angle =∠AOB}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] ∠AOB)}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] ∠AOB)}

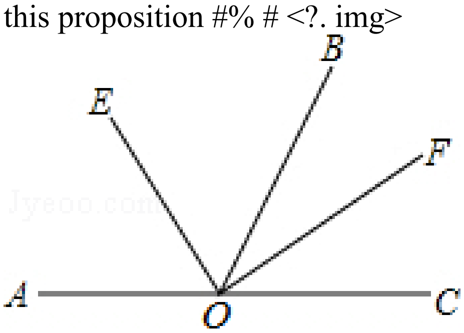
831, topic: As shown in the square ABCD, the point P in the AD, and not with the points A, D overlap, BP perpendicular bisector are cross-CD, AB at E, F points, pedal is Q, Guo point to point E as EH⊥AB H #% # (1) Proof: HF =AP; #% # (2) when the side length of the square ABCD 12, AP =4, seeking long segment EQ #% #. <img>



graph:
{"stem":{"pictures":[{"picturename":"1000041028_Q_1.jpg","coordinates":{"A":"0.00,0.00","B":"4.00,0.00","C":"4.00,4.00","D":"0.00,4.00","E":"3.21,4.00","F":"1.73,0.00","P":"0.00,1.48","Q":"2.00,0.74","M":"3.21,0.29","H":"3.21,0.00"},"collineations":{"0":"A###F###H###B","1":"B###C","2":"C###E###D","3":"D###P###A","4":"P###Q###M###B","5":"E###Q###F","6":"E###M###H"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: MiddlePerpendicularRelation [iLine1=FQ, iLine2=BP, crossPoint=Optional.of(Q)],SquareRelation{square=Square:ABCD},PointOnLineRelation{point=P, line=AD, isConstant=false, extension=false},NegativeRelation{relation=PointCoincidenceRelation{point1=P, point2=A}},NegativeRelation{relation=PointCoincidenceRelation{point1=P, point2=D}},LinePerpRelation{line1=EH, line2=AB, crossPoint=H},LineCrossRelation [crossPoint=Optional.of(F), iLine1=AB, iLine2=FE],LineCrossRelation [crossPoint=Optional.of(E), iLine1=CD, iLine2=FE],EqualityRelation{EQ=v_1},SquareRelation{square=Square:ABCD},EqualityRelation{AB=12},EqualityRelation{AP=4},Calculation:(ExpressRelation:[key:]v_1),ProveConclusionRelation:[Proof: EqualityRelation{FH=AP}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]EQ)}

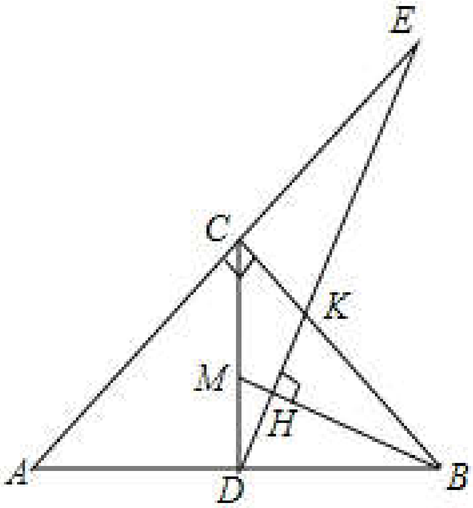
832, topic: As shown, a straight line AC, O is an AC point, ∠AOB =120 °, OE, OF are equally ∠AOB and ∠BOC #% # (1) # size required ∠EOF%. # (2) when the OB O rotates around, OE, oF remain ∠AOB and ∠BOC bisector, asked: OE, oF what kind of relationship you can position one sentence out of this proposition #% # <?. img>



graph:
{"stem":{"pictures":[{"picturename":"1000083109_Q_1.jpg","coordinates":{"A":"-4.63,0.05","B":"-0.25,2.61","C":"1.11,0.08","E":"-2.89,2.10","F":"0.96,1.62","O":"-1.70,0.07"},"collineations":{"0":"A###O###C","1":"O###E","2":"O###B","3":"O###F"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP:

833, topic: As shown in the Rt △ABC, ∠ACB =90 °, CD⊥AB, M is a point on the CD, DH⊥BM in H, DH extended line of extension lines cross in E. AC confirmation: #% # (1) △AED∽ △CBM; #% # (2) $ AE \ cdot CM =AC \ cdot CD $ #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000041415_Q_1.jpg","coordinates":{"A":"0.00,0.00","B":"6.00,0.00","C":"3.00,3.00","D":"3.00,0.00","E":"5.20,5.20","H":"3.46,1.08","M":"3.00,1.27","K":"3.89,2.11"},"collineations":{"0":"A###C###E","1":"E###K###H###D","2":"C###K###B","3":"B###H###M","4":"C###M###D","5":"A###D###B"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: RightTriangleRelation:RightTriangle:△ABC[Optional.of(C)],EqualityRelation{∠ACK=(1/2*Pi)},LinePerpRelation{line1=CD, line2=AB, crossPoint=D},PointOnLineRelation{point=M, line=CD, isConstant=false, extension=false},LinePerpRelation{line1=DH, line2=BM, crossPoint=H},LineCrossRelation [crossPoint=Optional.of(E), iLine1=DH, iLine2=AC],ProveConclusionRelation:[Proof: TriangleSimilarRelation{triangleA=△AED, triangleB=△CBM}],ProveConclusionRelation:[Proof: EqualityRelation{AE*CM=AC*CD}]

834, topic: FIG. 1, a known parallelogram ABCD $ $ in the AC diagonal, BD intersect at point O, E is a point on an extension line BD, and $ △ACE $ #% equilateral triangle.? # (1) Proof: quadrangle ABCD $ $ a diamond; #% # (2) 2, if $ ∠AED =2∠EAD $, $ AC =6 $ DE seeking long?.

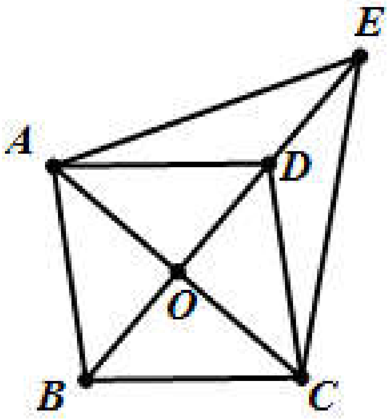
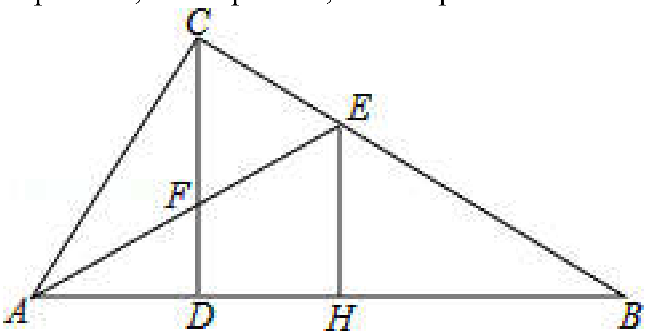


图 1

graph: {"stem":{"pictures":[{"picturename":"1000027649_Q_1.jpg","coordinates":{"A":"-0.69,3.94","B":"0.00,0.00","C":"4.00,0.00","D":"3.31,3.94","E":"5.06,6.04","O":"1.65,1.97"},"collineations":{"0":"A###B","1":"A###D","2":"A###O###C","3":"E###A","4":"B###O###D###E","5":"C###B","6":"C###D","7":"C###E"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: ParallelogramRelation{parallelogram=Parallelogram:ABCD},LineCrossRelation [crossPoint=Optional.of(O), iLine1=AC, iLine2=BD],PointOnLineRelation{point=E, line=BD, isConstant=false, extension=true},RegularTriangleRelation:RegularTriangle:△ACE,EqualityRelation{DE=v_0},(ExpressRelation:[key:]2),EqualityRelation{∠AED=2*∠DAE},EqualityRelation{AC=6},Calculation:(ExpressRelation:[key:]v_0),ProveConclusionRelation:[Proof: RhombusRelation{rhombus=Rhombus:ABCD}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]DE)}

835, topic: As shown in the △ABC, ∠ACB =90 °, CD⊥AB at point D, ∠CAB cross the bisector CD at point F., BC at point E, over to point E as EH⊥AB point H. Proof: EC =CF =EH #% # <img>

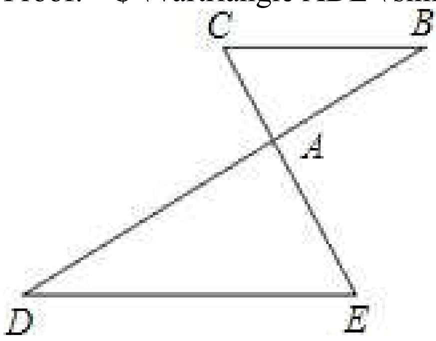


graph: {"stem":{"pictures":[{"picturename":"1000031288_Q_1.jpg","coordinates":{"A":"-9.00,2.00","B":"-3.00,2.00","C":"-7.17,4.76","D":"-7.17,2.00","E":"-5.69,3.78","F":"-7.17,2.98","H":"-5.69,2.00"},"collineations":{"0":"E###H","1":"A###D###H###B","2":"A###C","3":"B###E###C","4":"C###F###D","5":"A###F###E"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: AngleBisectorRelation{line=AF,angle=∠CAD, angle1=∠CAF, angle2=∠DAF},TriangleRelation:△ABC,EqualityRelation{∠ACE=(1/2*Pi)},LinePerpRelation{line1=CD, line2=AB, crossPoint=D},LinePerpRelation{line1=EH, line2=AB,

crossPoint=H},ProveConclusionRelation:[Proof: MultiEqualityRelation [multiExpressCompare=CE=CF=EH, originExpressRelationList=[], keyWord=null, result=null]]

836, topic: FIG, $ CE $ $ and $ the BD at point $ A $, $ AC =2 $, $ AE =3 $, $ AB =4 $, $ AD =6 $, Proof: $ \ vartriangle ADE \ sim \ vartriangle ABC $.



graph:

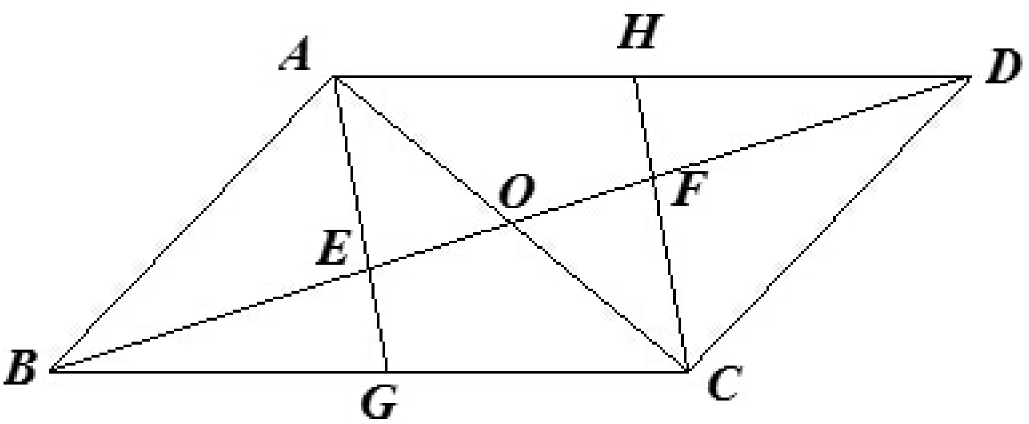
{"stem":{"pictures":[{"picturename":"1000005822_Q_1.jpg","coordinates":{"A":"-0.59,1.37","B":"1.18,2.28","C":"-1.00,2.28","D":"-3.26,0.00","E":"-0.00,0.00"},"collineations":{"0":"B###A###D","1":"C###A###E","2":"B###C","3":"D###E"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: LineCrossRelation [crossPoint=Optional.of(A), iLine1=CE, iLine2=BD],EqualityRelation{AC=2},EqualityRelation{AE=3},EqualityRelation{AB=4},EqualityRelation{AD=6},ProveConclusionRelation:[Proof: TriangleSimilarRelation{triangleA=△ADE, triangleB=△ABC}]

837, topic: FIG, parallelogram ABCD, the diagonal line AC, BD intersect at point O, point E, point F on the BD, and $ BE =DF $, connected to and extend AE, BC at point G , CF and connected to the extension, in the cross point of AD H?

#% # (1) Proof: $ \ vartriangle AOE \ cong \ vartriangle COF $?

#% # (2) If the AC split the $ \ angle HAG $, Proof: AGCH quadrilateral is a rhombus.

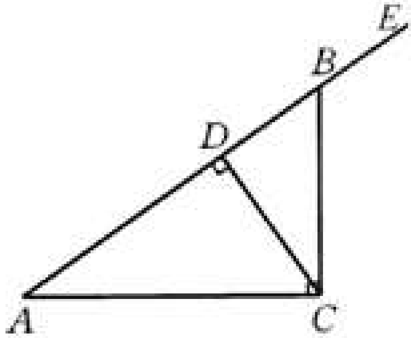


graph:

{"substems":[{},{"questionrelies":"1"}],"stem":{"pictures":[{"variable-equals":{},"picturename":"1000001171_Q_1.jpg","collineations":{"3":"F###H###C","2":"A###E###G","1":"A###O###C","0":"A###H###D","5":"B###G###C","4":"B###E###O###F###D","6":"A###B","7":"C###D"},"coordinates":{"D":"3.10,2.41","E":"-7.30,-0.91","F":"-0.37,1.30","G":"-7.30,-1.98","A":"-7.30,2.30","B":"-10.77,-2.01","C":"-0.37,-1.90","O":"-3.84,0.20","H":"-0.37,2.37"}}]}}

NLP: ParallelogramRelation{parallelogram=Parallelogram:ABCD},LineCrossRelation [crossPoint=Optional.of(O), iLine1=AC, iLine2=BD],PointOnLineRelation{point=E, line=BD, isConstant=false, extension=false},PointOnLineRelation{point=F, line=BD, isConstant=false, extension=false},EqualityRelation{BE=DF},SegmentRelation:AE,LineCrossRelation [crossPoint=Optional.of(G), iLine1=AE, iLine2=BC],SegmentRelation:CF,LineCrossRelation [crossPoint=Optional.of(H), iLine1=CF, iLine2=AD],AngleBisectorRelation{line=AC,angle=∠EAH, angle1=∠CAE, angle2=∠CAH},ProveConclusionRelation:[Proof: TriangleCongRelation{triangleA=△AOE, triangleB=△COF}],ProveConclusionRelation:[Proof: RhombusRelation{rhombus=Rhombus:AGCH}]

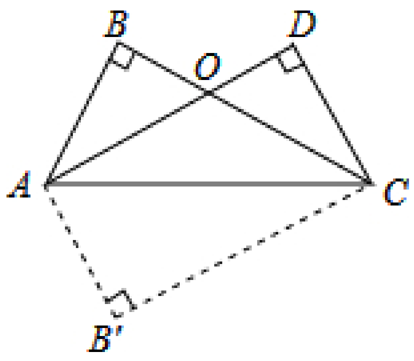
838, topic: As shown in the △ABC, ∠ACB =90 °, CD⊥AB, pedal is D, ∠BCD =35 °, requirements: #% # (1) ∠EBC degree; #% # (2) ∠A degree. #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"DEB5F45F03144B9FBA63ED3778F9D0D2.jpg","coordinates":{"A":"-14.00,3.00","B":"-10.00,5.80","C":"-10.00,3.00","D":"-11.32,4.88","E":"-8.83,6.62"},"collineations":{"0":"C###A","1":"A###D###B###E","2":"B###C","3":"C###D"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[{"substemid":"2","questionrelies":"1","pictures":[],"appliedproblems":{}}]}

NLP: TriangleRelation: △ABC, EqualityRelation {∠ACB =(1/2 * Pi)}, LinePerpRelation {line1 =CD, line2 =AB, crossPoint =D}, EqualityRelation {∠BCD =(7/36 * Pi)}, aNGULAR size: AngleRelation {angle =∠CBE}, aNGULAR size: AngleRelation {angle =∠CAD}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] ∠CBE)}, SolutionConclusionRelation { evaluation relation =(size) :(ExpressRelation: [key:] ∠CAD)}

839, topic: the AC rectangular AB'CD diagonally folded as shown to give pattern, known ∠BAO =30 °, and seeking ∠AOC degree ∠BAC #% # <img>.

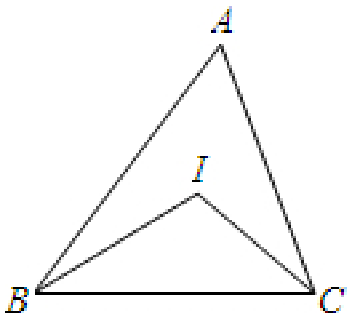


graph:

{"stem":{"pictures":[{"picturename":"1000073072_Q_1.jpg","coordinates":{"A":"0.00,0.00","B":"1.80,2.40","B'":"1.80,-2.40","C":"5.00,0.00","D":"3.20,2.40","O":"2.50,1.87"},"collineations":{"0":"B###O###C","1":"A###O###D","2":"C###D","3":"A###B","4":"A###C","5":"A###B'","6":"C###B'"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: EqualityRelation {∠BAO =(1/6 * Pi)}, find the size of the angle: AngleRelation {angle =∠AOC}, ANGULAR size: AngleRelation {angle =∠BAC}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] ∠AOC)}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] ∠BAC)}

840, topic: As shown in the △ABC, and ∠ACB ∠ABC bisectors intersect at the point I, when ∠ABC =70 °, ∠ACB =50 °, the degree of seeking ∠BIC #% # <img. >

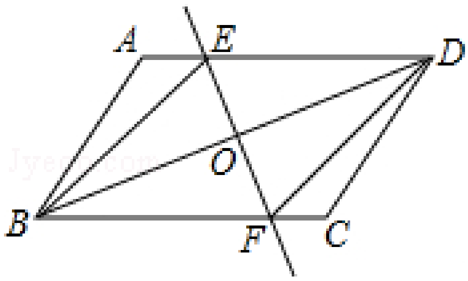


graph:

{"stem":{"pictures":[{"picturename":"1000051259_Q_1.jpg","coordinates":{"A":"-5.04,6.29","B":"-5.62,3.00","C":"-2.28,3.00","I":"-4.43,4.00"},"collineations":{"0":"A###B","1":"A###C","2":"B###I","3":"I###C","4":"B###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: AngleBisectorRelation{line=BI,angle=∠ABC, angle1=∠ABI, angle2=∠CBI},AngleBisectorRelation{line=CI,angle=∠ACB, angle1=∠ACI, angle2=∠BCI},TriangleRelation:△ABC,EqualityRelation{∠ABC=(7/18*Pi)},EqualityRelation{∠ACB=(5/18*Pi)},Calculation:AngleRelation{angle=∠BIC},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]∠BIC)}

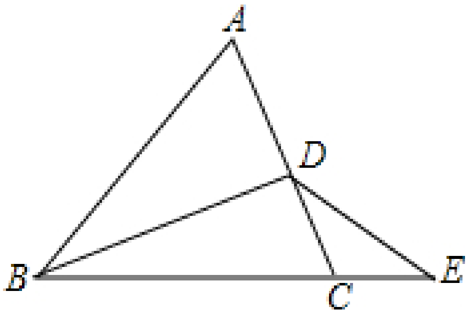
841, topic: As shown in the □ABCD, O is the midpoint of the diagonal line BD, a straight line through the point O are cross EF AD, BC in E, F two connecting BE, DF #% # (1.) Proof: △DOE≌△BOF; #% # (2) when the number of degrees ∠DOE equal, a diamond quadrangle BFDE please explain why #% # <img>?.



graph:
{"stem":{"pictures":[{"picturename":"1000034733_Q_1.jpg","coordinates":{"A":"2.00,3.00","B":"1.00,0.00","C":"6.00,0.00","D":"7.00,3.00","E":"3.25,3.00","F":"4.75,0.00","O":"4.00,1.50"},"collineations":{"0":"B###A","1":"B###E","2":"D###C","3":"F###D","4":"A###E###D","5":"B###F###C","6":"B###O###D","7":"E###O###F"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP:
ParallelogramRelation{parallelogram=Parallelogram:ABCD},MiddlePointOfSegmentRelation{middlePoint=O,segment=BD},LineCrossRelation [crossPoint=Optional.of(E), iLine1=EF, iLine2=AD],LineCrossRelation [crossPoint=Optional.of(F), iLine1=EF, iLine2=BC],PointOnLineRelation{point=O, line=EF, isConstant=false, extension=false},SegmentRelation:BE,SegmentRelation:DF,RhombusRelation{rhombus=Rhombus:BFDE},Calculation:AngleRelation{angle=∠DOE},ProveConclusionRelation:[Proof: TriangleCongRelation{triangleA=△DOE, triangleB=△BOF}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]∠DOE)}

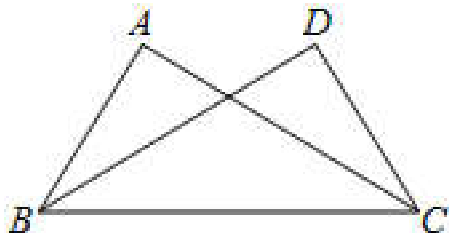
842, topic: FIG, known point D on the AC, the point E on the extension line BC Proof: ∠ADB＞∠CDE #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000072320_Q_1.jpg","coordinates":{"A":"-5.00,6.00","B":"-8.00,2.00","C":"-3.00,2.00","D":"-3.79,3.57","E":"-1.00,2.00"},"collineations":{"0":"A###B","1":"B###D","2":"D###E","3":"A###D###C","4":"B###C###E"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: PointOnLineRelation{point=D, line=AC, isConstant=false, extension=false},PointOnLineRelation{point=E, line=BC, isConstant=false, extension=true},ProveConclusionRelation:[Proof: InequalityRelation{∠ADB>∠CDE}]

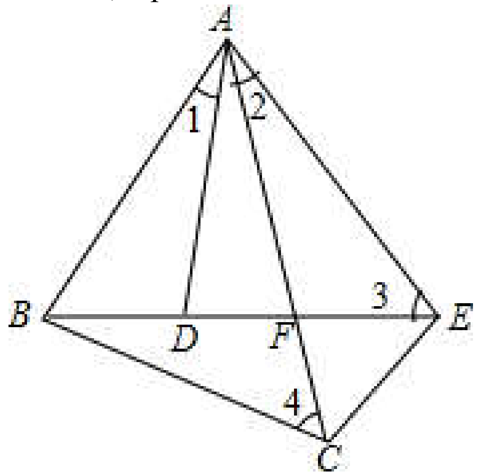
843, topic: As shown in the △ABC and △DCB, AB =DC, AC =DB, Proof: . △ABC≌ △DCB #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"E00F1255D1EF460890C91E71953B6D6B.jpg","coordinates":{"A":"-12.00,6.00","B":"-14.00,3.00","C":"-8.00,3.00","D":"-10.00,6.00"},"collineations":{"0":"C###A","1":"A###B","2":"B###C","3":"B###D","4":"C###D"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP:
TriangleRelation:△ABC,TriangleRelation:△DCB,EqualityRelation{AB=CD},EqualityRelation{AC=BD},ProveConclusionRelation:[Proof: TriangleCongRelation{triangleA=△ABC, triangleB=△DCB}]

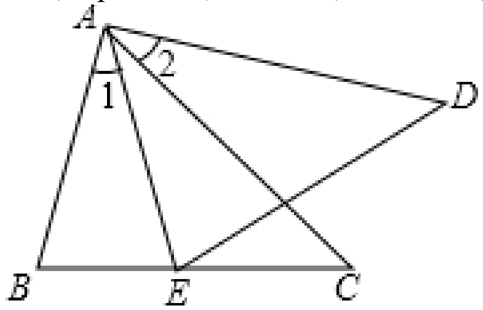
844, topic: FIG known ∠1 =∠2, ∠3 =∠4, Proof: △ABD∽ △ACE #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000062133_Q_1.jpg","coordinates":{"A":"-1.46,0.86","B":"-3.25,-2.65","C":"0.31,-4.47","D":"-1.47,-2.65","E":"2.39,-2.65","F":"-0.30,-2.65"},"collineations":{"0":"B###D###F###E","1":"F###A###C","2":"A###B","3":"A###E","4":"A###D","5":"C###B","6":"E###C"},"variable-equals":{"0":"∠1=∠BAD","1":"∠2=∠EAF","2":"∠3=∠AEF","3":"∠4=∠BCF"},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: EqualityRelation{∠BAD=∠EAF},EqualityRelation{∠AEF=∠BCF},ProveConclusionRelation:[Proof: TriangleSimilarRelation{triangleA=△ABD, triangleB=△ACE}]

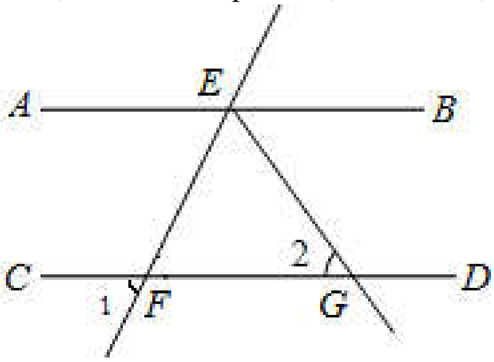
845, topic: FIG, AB =AE, ∠1 =∠2, ∠C =∠D Proof:. △ABC≌ △AED #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"3F76EF912A0E461BAF2BCB78BE11745B.jpg","coordinates":{"A":"-13.00,5.00","B":"-14.00,1.00","C":"-10.00,1.00","D":"-8.47,2.88","E":"-12.00,1.00"},"collineations":{"0":"A###B","1":"D###A","2":"E###B###C","3":"A###C","4":"D###E","5":"A###E"},"variable-equals":{"0":"∠1=∠BAE","1":"∠2=∠CAD"},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: EqualityRelation{AB=AE},EqualityRelation{∠BAE=∠CAD},EqualityRelation{∠ACE=∠ADE},ProveConclusionRelation:[Proof: TriangleCongRelation{triangleA=△ABC, triangleB=△AED}]

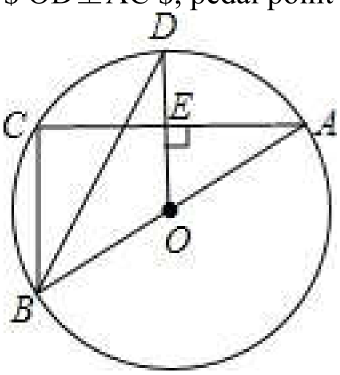
846, topic: FIG known AB // CD, EF cross-linear AB at point E, cross-CD at point F, EG equally ∠BEF, cross CD at point G, ∠1 =50 °, the required degree ∠2. #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000037828_Q_1.jpg","coordinates":{"A":"-10.79,-3.95","B":"-6.72,-3.97","C":"-10.74,-5.95","D":"-6.72,-5.96","E":"-8.53,-3.95","F":"-9.96,-5.95","G":"-7.48,-5.95"},"collineations":{"0":"A###E###B","1":"C###F###G###D","2":"E###G","3":"E###F"},"variable-equals":{"0":"∠1=∠EFG","1":"∠2=∠EGF"},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: LineParallelRelation [iLine1=AB, iLine2=CD],LineCrossRelation [crossPoint=Optional.of(E), iLine1=EF, iLine2=AB],LineCrossRelation [crossPoint=Optional.of(F), iLine1=EF, iLine2=CD],AngleBisectorRelation{line=EG,angle=∠BEF, angle1=∠BEG, angle2=∠FEG},LineCrossRelation [crossPoint=Optional.of(G), iLine1=EG, iLine2=CD],EqualityRelation{∠EFG=(5/18*Pi)},Calculation:(ExpressRelation:[key:]∠EGF),SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]∠EGF)}

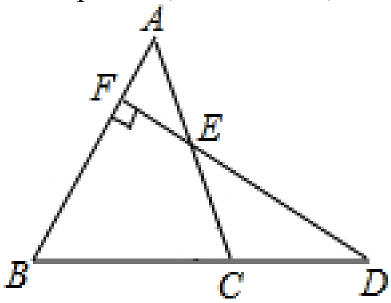
847, topic: FIG, $ \odot O $ a $ \triangle ABC $ circumcircle, AB $ \odot O $ is the diameter, D is the point $ \odot O $, $ OD\perp AC $, pedal point E, connected BD, $ \angle ODB =30° $, Proof: $ BC =OD $.



graph:
{"stem":{"pictures":[{"picturename":"1000024940.jpg","coordinates":{"A":"4.00,3.00","B":"-4.00,-3.00","C":"-4.00,3.00","D":"0.00,5.00","E":"0.00,3.00","O":"0.00,0.00"},"collineations":{"0":"A###O###B","1":"E###C###A","2":"E###D###O","3":"B###C","4":"B###D"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"A###B###D###C"}]}],"appliedproblems":{}},"substems":[]}

NLP: InscribedShapeOfCircleRelation{closedShape=△ABC, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}},DiameterRelation{diameter=AB, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, length=null},PointOnCircleRelation{circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, points=[D]},LinePerpRelation{line1=OD, line2=AC, crossPoint=E},SegmentRelation:BD,EqualityRelation{∠BDE=(1/6*Pi)},ProveConclusionRelation:[Proof: EqualityRelation{BC=DO}]

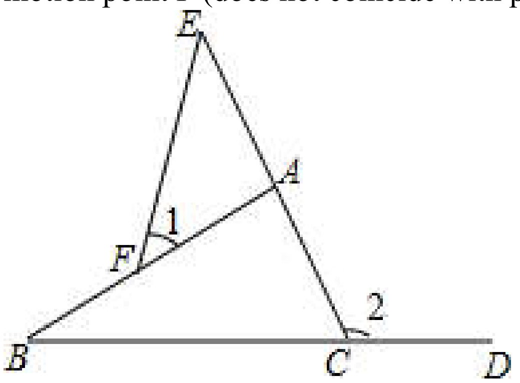
848, topic: FIG., It is known that D is an extended line BC, DF⊥AB cross AC at point E, in the AB cross point F, ∠A =70 °, ∠D =50 °, the required degree ∠ACB. #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000072320_Q_1.jpg","coordinates":{"A":"-3.53,7.21","B":"-8.55,3.00","C":"-2.00,3.00","D":"-1.00,3.00","E":"-2.77,5.10","F":"-4.12,6.72"},"collineations":{"0":"A###F###B","1":"B###C###D","2":"A###E###C","3":"D###E###F"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: PointOnLineRelation{point=D, line=BC, isConstant=false, extension=true},LinePerpRelation{line1=DF, line2=AB, crossPoint=F},LineCrossRelation [crossPoint=Optional.of(E), iLine1=DF, iLine2=AC],LineCrossRelation [crossPoint=Optional.of(F), iLine1=DF, iLine2=AB],EqualityRelation{∠EAF=(7/18*Pi)},EqualityRelation{∠CDE=(5/18*Pi)},Calculation:AngleRelation{angle=∠BCE},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]∠BCE)}

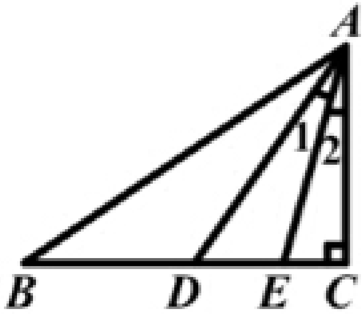
849, topic: As shown in △ABC, D is on the extension line of the BC, E extension line of the CA, the motion point F (does not coincide with point A) #% # confirmation on AB:. ∠1 < ∠2 #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000082705_Q_1.jpg","coordinates":{"A":"-1.19,0.56","B":"-3.92,-1.59","C":"-0.49,-1.53","D":"1.19,-1.51","E":"-1.69,2.06","F":"-2.56,-0.52"},"collineations":{"0":"B###C###D","1":"C###A###E","2":"B###F###A","3":"E###F"},"variable-equals":{"0":"∠1=∠EFA","1":"∠2=∠ECD"},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: PointRelation:A,TriangleRelation:△ABC,PointOnLineRelation{point=D, line=BC, isConstant=false, extension=true},PointOnLineRelation{point=E, line=CA, isConstant=false, extension=true},PointOnLineRelation{point=F, line=AB, isConstant=false, extension=false},ProveConclusionRelation:[Proof: InequalityRelation{∠AFE<∠ACD}]

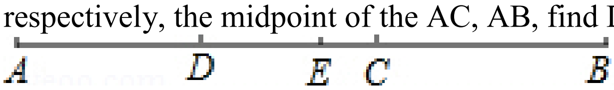
850, topic: FIG known $ ∠B =34 ° $, $ ∠AEB =104 ° $, $ ∠1 =∠2 $, $ AC⊥BC $, $ ∠BAD $ required degree.



graph:
{"stem":{"pictures":[{"picturename":"1000022491_Q_1.jpg","coordinates":{"A":"5.00,6.75","B":"-5.00,0.00","C":"5.00,0.00","D":"1.41,0.00","E":"3.32,0.00"},"collineations":{"0":"B###D###E###C","1":"A###B","2":"A###D","3":"A###E","4":"A###C"},"variable-equals":{"0":"∠1=∠DAE","1":"∠2=∠EAC"},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: EqualityRelation {∠ABD =(17/90 * Pi)}, EqualityRelation {∠AED =(26/45 * Pi)}, EqualityRelation {∠DAE =∠CAE}, LinePerpRelation {line1 =AC, line2 =BC, crossPoint =C}, aNGULAR size: AngleRelation {angle =∠BAD}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] ∠BAD)}

851, topic: FIG known point C on AB point, $ AC =12cm $, $ CB =\ frac {1} {2} AC $, D, E respectively, the midpoint of the AC, AB, find DE long.

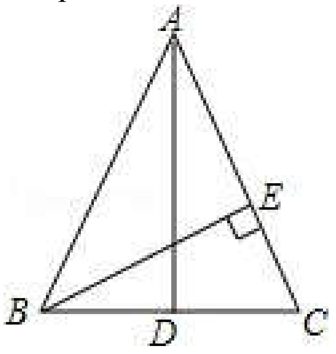


graph:
{"stem":{"pictures":[{"picturename":"1000025961_Q_1.jpg","coordinates":{"A":"0.00,0.00","B":"9.00,0.00","C":"6.00,0.00","D":"3.00,0.00","E":"4.50,0.00"},"collineations":{"0":"B###A###D###C###E"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: EqualityRelation{DE=v_0},PointOnLineRelation{point=C, line=AB, isConstant=false, extension=false},EqualityRelation{AC=12},EqualityRelation{BC=(1/2)*AC},MiddlePointOfSegmentRelation{middlePoint=D,segment=AC},MiddlePointOfSegmentRelation{middlePoint=E,segment=AB},Calculation:(ExpressRelation:[key:]v_0),SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]DE)}

852, topic: As shown in the $ △ABC $, $ AB =AC $, AD is the edge of the center line BC, $ BE⊥AC

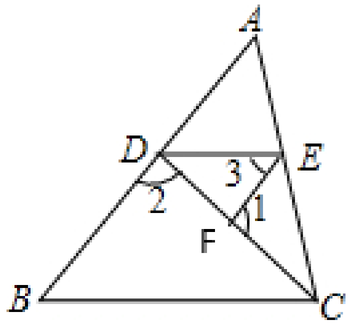
$ at point E. confirmation $ ∠CBE =∠BAD $.



graph: {"stem":{"pictures":[{"picturename":"1000026614_Q_1.jpg","coordinates":{"A":"3.00,8.00","B":"1.00,4.00","C":"5.00,4.00","D":"3.00,4.00","E":"4.20,5.60"},"collineations":{"0":"A###B","1":"A###C","2":"A###D","3":"B###D###C","4":"B###E"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleRelation:△ABC,EqualityRelation{AB=AC},LineDecileSegmentRelation [iLine1=AD, iLine2=BC, crossPoint=Optional.of(D)],LinePerpRelation{line1=BE, line2=AC, crossPoint=E},ProveConclusionRelation:[Proof: EqualityRelation{∠DBE=∠BAD}]

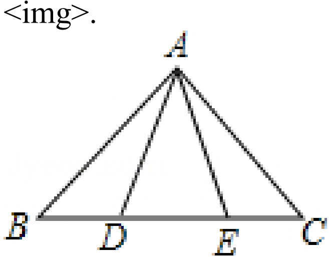
853, topic: FIG known ∠1 + ∠2 =180 °, ∠3 =∠B, Proof: . DE // BC #% # <img>



graph: {"stem":{"pictures":[{"picturename":"1000051285_Q_1.jpg","coordinates":{"A":"-4.00,5.19","B":"-6.00,1.89","C":"-3.00,1.89","D":"-5.09,3.39","E":"-3.46,3.39","F":"-3.97,2.59"},"collineations":{"0":"A###D###B","1":"A###E###C","2":"C###B","3":"D###F###C","4":"D###E","5":"F###E"},"variable-equals":{"0":"∠1=∠EFC","1":"∠2=∠BDC","2":"∠3=∠DEF"},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: EqualityRelation{∠CFE+∠BDF=(Pi)},EqualityRelation{∠DEF=∠CBD},ProveConclusionRelation:[Proof: LineParallelRelation [iLine1=DE, iLine2=BC]]

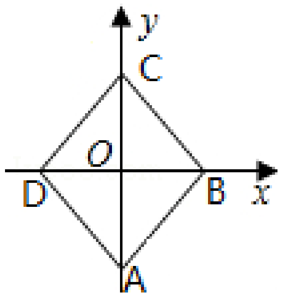
854, topic: FIG, known points D, E on the side BC △ABC, AB =AC, BD =CE, Proof: AD =AE #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000037610_Q_1.jpg","coordinates":{"A":"-11.00,8.00","B":"-12.60,6.00","C":"-9.40,6.00","D":"-11.56,6.00","E":"-10.44,6.00"},"collineations":{"0":"B###D###E###C","1":"A###B","2":"A###C","3":"A###D","4":"A###E"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: PointOnLineRelation{point=D, line=BC, isConstant=false, extension=false},PointOnLineRelation{point=E, line=BC, isConstant=false, extension=false},TriangleRelation:△ABC,EqualityRelation{AB=AC},EqualityRelation{BD=CE},ProveConclusionRelation:[Proof: EqualityRelation{AD=AE}]

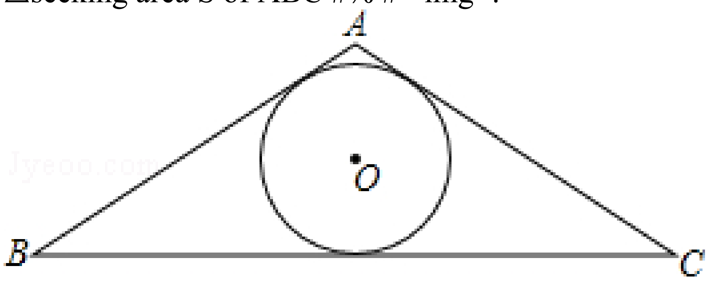
855, topic: FIG square ABCD to (0, 0) as the center, a side length of 4, the coordinates of each vertex find #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000070673_Q_1.jpg","coordinates":{"A":"0.00,-2.83","B":"2.83,0.00","C":"0.00,2.83","D":"-2.83,0.00","O":"0.00,0.00"},"collineations":{"0":"A###B","1":"B###C","2":"C###D","3":"D###A","4":"D###O###B","5":"C###O###A"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP:

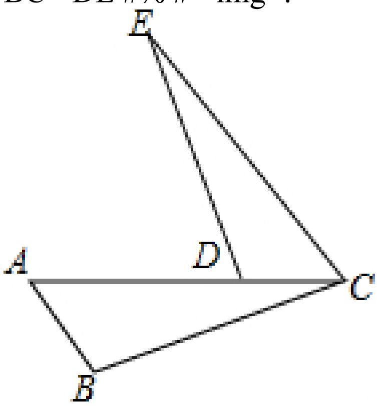
856, topic: FIG known △⊙O inscribed circle radius is R & lt ABC, ABC perimeter of △L $ $, △seeking area S of ABC #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000083416_Q_1.jpg","coordinates":{"A":"0.00,1.32","B":"-2.61,-0.99","C":"2.60,-1.01","O":"0.00,0.00"},"collineations":{"0":"B###A","1":"A###C","2":"B###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: CircumscribedShapeOfCircleRelation:△ABC/Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}Points:[],EqualityRelation{C_△ABC=v_0},EqualityRelation{S_△ABC=S},RadiusRelation{radius=null, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, length=Express:[r]},Calculation:(ExpressRelation:[key:]S),SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]S)}

857, topic:. As shown, point A, D, C on the same line, AB // EC, AC =CE, ∠B =∠EDC #% # Proof: BC =DE #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"ECCA0DB51ECD4ACA9FF1B777E58F73A7.jpg","coordinates":{"A":"-15.00,3.00","B":"-14.47,2.15","C":"-11.00,3.00","D":"-12.00,3.00","E":"-13.12,6.39"},"collineations":{"0":"A###B","1":"A###D###C","2":"B###C","3":"C###E","4":"D###E"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

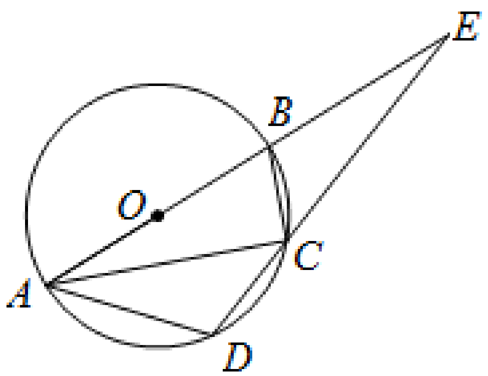
NLP: LineParallelRelation [iLine1=AB, iLine2=EC],EqualityRelation{AC=CE},EqualityRelation{∠ABC=∠CDE},ProveConclusionRelation:[Proof: EqualityRelation{BC=DE}]

858, topic: in the \$ △ABC \$, \$ \ angle A =90 ^ \ circ \$, \$ BC =10 \$, \$ AC =8 \$, \$ △ABC \$ shortest side in the ratio of the longest side.

graph:
{"stem":{"pictures":[{"picturename":"1000005747_Q_1.jpg","coordinates":{"A":"-9.39,9.00","B":"-11.46,6.83","C":"-6.49,6.24"},"collineations":{"0":"B###A","1":"B###C","2":"A###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleRelation:△ABC,EqualityRelation{∠BAC=(1/2*Pi)},EqualityRelation{BC=10},EqualityRelation{AC=8}

859, topic: As shown, the contact with the quadrilateral ABCD ⊙O, AC bisecting ∠BAD, DC extended line AB in the cross extension line E, if AC =CE Proof: BE =AD #% # <img>.?

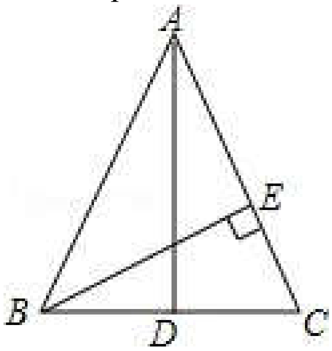


graph:

{"stem":{"pictures":[{"picturename":"1000060804_Q_1.jpg","coordinates":{"A":"0.18,-1.05","B":"1.01,-0.53","C":"1.07,-0.88","D":"0.80,-1.23","E":"1.68,-0.11","O":"0.59,-0.78"},"collineations":{"0":"A###D","1":"D###C###E","2":"E###B###O###A","3":"A###C","4":"B###C"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"A###D###C###B"}]}],"appliedproblems":{}},"substems":[]}

NLP: InscribedShapeOfCircleRelation{closedShape=ABCD, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}},AngleBisectorRelation{line=AC,angle=∠DAO, angle1=∠CAD, angle2=∠CAO},LineCrossRelation [crossPoint=Optional.of(E), iLine1=DC, iLine2=AB],EqualityRelation{AC=CE},ProveConclusionRelation:[Proof: EqualityRelation{BE=AD}]

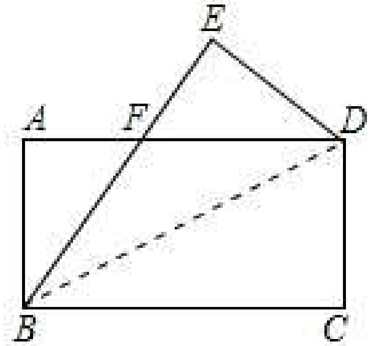
860, topic: FIG 1-1-21, in the $ \triangle ABC $, $ AB =AC $, AD is the edge of the center line BC, $ BE\perp AC $ at point E. confirmation $ \angle CBE =\angle BAD $. <img>



graph:
{"stem":{"pictures":[{"picturename":"1000026614_Q_1.jpg","coordinates":{"A":"3.00,8.00","B":"1.00,4.00","C":"5.00,4.00","D":"3.00,4.00","E":"4.20,5.60"},"collineations":{"0":"A###B","1":"A###C","2":"A###D","3":"B###D###C","4":"B###E"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: (ExpressRelation:[key:]-1-21),TriangleRelation:△ABC,EqualityRelation{AB=AC},LineDecileSegmentRelation [iLine1=AD, iLine2=BC, crossPoint=Optional.of(D)],LinePerpRelation{line1=BE, line2=AC, crossPoint=E},ProveConclusionRelation:[Proof: EqualityRelation{∠DBE=∠BAD}]

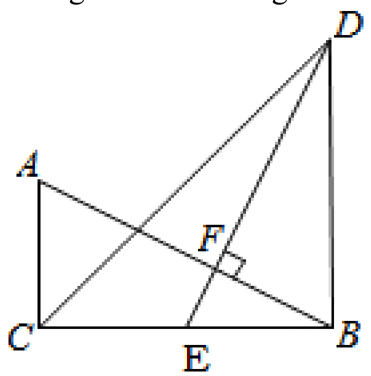
861, topic: As shown, a rectangular ABCD ($ AB <AD $) folded along a BD, point C falls point E, point in AD and BE cross F.?#%#(1) Proof: $ BF =FD $;? #% # (2) when the $ AB =4 $, $ BC =8 $, DF seeking long.



graph:
{"stem":{"pictures":[{"picturename":"1000006998_Q_1.jpg","coordinates":{"A":"0.00,4.00","B":"0.00,0.00","C":"8.00,0.00","D":"8.00,4.00","E":"4.80,6.40","F":"3.00,4.00"},"collineations":{"0":"E###D","1":"A###F###D","2":"B###A","3":"B###E###F","4":"D###A","5":"C###D","6":"B###C","7":"B###D"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP:
InequalityRelation{AB<AD},RectangleRelation{rectangle=Rectangle:ABCD},TurnoverRelation{start=C, segment=BD,target=E},LineCrossRelation [crossPoint=Optional.of(F), iLine1=BE, iLine2=AD],EqualityRelation{DF=v_0},EqualityRelation{AB=4},EqualityRelation{BC=8},Calculation:(ExpressRelation:[key:]v_0),ProveConclusionRelation:[Proof: EqualityRelation{BF=DF}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]DF)}

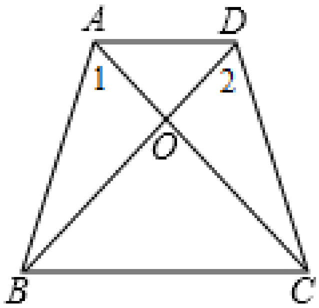
862, topic: Given: As shown in the △ABC and △DBC, ∠ACB =∠DBC =90 °, E is the midpoint of BC, EF⊥AB, pedal is F, and AB =DE #%. # (1) Proof: BC =DB; #% # (2) when the DB =8cm, long seeking AC #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000072675_Q_1.jpg","coordinates":{"A":"0.00,4.00","B":"8.00,0.00","C":"0.00,0.00","D":"8.00,8.00","E":"4.00,0.00","F":"4.80,1.60"},"collineations":{"0":"E###F###D","1":"D###B","2":"B###F###A","3":"A###C","4":"C###E###B","5":"C###D"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleRelation:△ABC,TriangleRelation:△DBC,MultiEqualityRelation [multiExpressCompare=∠ACE=∠DBE=(1/2*Pi), originExpressRelationList=[], keyWord=null, result=null],MiddlePointOfSegmentRelation{middlePoint=E,segment=BC},LinePerpRelation{line1=EF, line2=AB, crossPoint=F},EqualityRelation{AB=DE},EqualityRelation{AC=v_0},EqualityRelation{BD=8},Calculation:(ExpressRelation:[key:]v_0),ProveConclusionRelation:[Proof: EqualityRelation{BC=BD}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]AC)}

863, topic: Given: As shown, the quadrilateral ABCD, AC, BD intersect at point O, AB =DC, ∠1 =∠2 Proof:. AC =DB #% # <img>

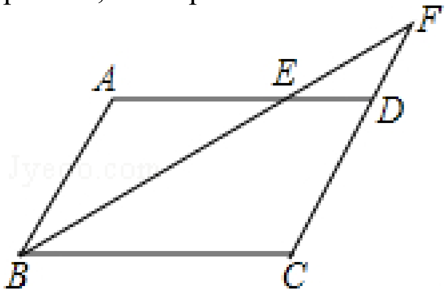


graph:
{"stem":{"pictures":[{"picturename":"1000061413_Q_1.jpg","coordinates":{"A":"6.00,7.00","B":"5.00,3.00","C":"10.00,3.00","D":"9.00,7.00","O":"7.50,5.50"},"collineations":{"0":"A###B","1":"B###C","2":"C###

D","3":"D###A","4":"A###O###C","5":"B###O###D"},"variable-equals":{"0":"∠1=∠BAC","1":"∠2=∠BDC"},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: known conditions QuadrilateralRelation {quadrilateral =ABCD}, LineCrossRelation [crossPoint =Optional.of (O), iLine1 =AC, iLine2 =BD], EqualityRelation {AB =CD}, EqualityRelation {∠BAO =∠CDO}, ProveConclusionRelation: [Proof: EqualityRelation {AC =BD}]

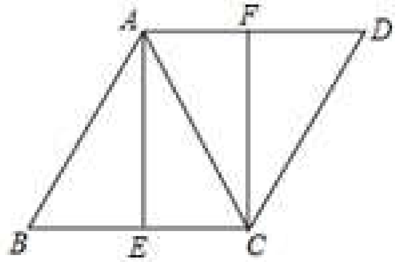
864, topic:. As shown, the parallelogram ABCD, if AB =6, AD =10, ∠ABC cross the bisector AD at point E, cross-point of an extension line CD in F., Long seeking DF #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000031841_Q_1.jpg","coordinates":{"A":"-7.93,4.80","B":"-9.00,2.00","C":"-4.00,2.00","D":"-2.93,4.80","E":"-4.93,4.80","F":"-2.22,6.67"},"collineations":{"0":"A###E###D","1":"A###B","2":"C###D###F","3":"B###C","4":"B###E###F"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: AngleBisectorRelation{line=BF,angle=∠ABC, angle1=∠ABF, angle2=∠CBF},EqualityRelation{DF=v_1},ParallelogramRelation{parallelogram=Parallelogram:ABCD},EqualityRelation{AB=6},EqualityRelation{AD=10},Calculation:(ExpressRelation:[key:]v_1),SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]DF)}

865, topic: FIG., In the diamond $ ABCD $, $ $ is the AC diagonal point $ E $, $ F $ are the BC side $ $, $ a midpoint of the AD # $% # (1.?) Proof: $ \ vartriangle ABE \ cong \ vartriangle CDF $; #% # (2) when the $ \ angle B =60 ^ \ circ $, $ AB =4 $, the AE $ $ seek long line?.

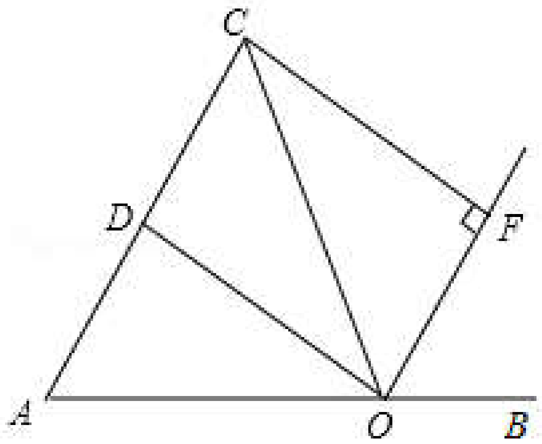


graph:
{"stem":{"pictures":[{"picturename":"1000005420_Q_1.jpg","coordinates":{"A":"-4.00,5.27","B":"-6.67,-0.64","C":"-0.19,-0.61","D":"2.49,5.32","E":"-3.43,-0.62","F":"-0.75,5.29"},"collineations":{"0":"A###F###D","1":"B###E###C","2":"A###B","3":"A###E","4":"A###C","5":"F###C","6":"D###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP:
RhombusRelation{rhombus=Rhombus:ABCD},SegmentRelation:AC,MiddlePointOfSegmentRelation{middlePoint=E,segment=BC},MiddlePointOfSegmentRelation{middlePoint=F,segment=AD},EqualityRelation{AE=v_0},EqualityRelation{∠ABE=(1/3*Pi)},EqualityRelation{AB=4},Calculation:(ExpressRelation:[key:]v_0),ProveConclusionRelation:[Proof: TriangleCongRelation{triangleA=△ABE,

triangleB=△CDF}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]AE)}

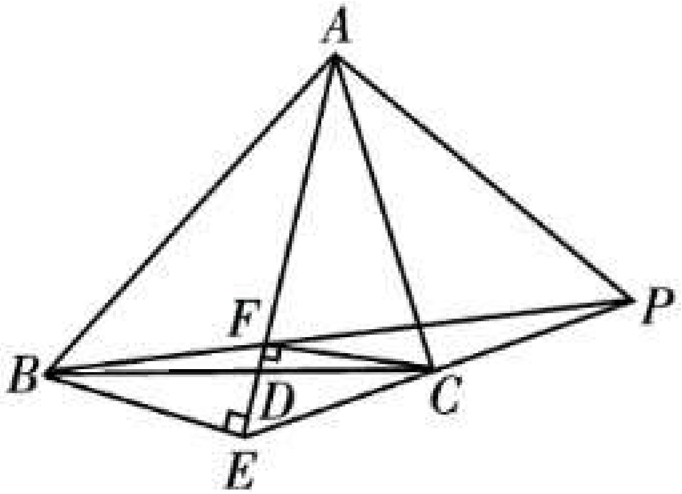
866, topic: FIG, point O is a point, \$ OA =OC \$ on the line segment AB, OD bisecting deposit \$ \$ ∠AOC AC at point D, OF bisecting \$ ∠COB \$, \$ CF⊥OF \$ at point F. Proof: \$ CDOF \$ quadrilateral is a rectangle.



graph:
{"stem":{"pictures":[{"picturename":"1000027645_Q_1.jpg","coordinates":{"A":"0.00,0.00","B":"8.00,0.00","C":"3.41,5.41","D":"1.70,2.70","F":"7.70,2.70","O":"6.00,0.00"},"collineations":{"0":"A###D###C","1":"A###O###B","2":"C###O","3":"D###O","4":"C###F","5":"O###F"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: PointOnLineRelation{point=O, line=AB, isConstant=false, extension=false},EqualityRelation{AO=CO},AngleBisectorRelation{line=OD,angle=∠AOC, angle1=∠AOD, angle2=∠COD},LineCrossRelation [crossPoint=Optional.of(D), iLine1=OD, iLine2=AC],AngleBisectorRelation{line=OF,angle=∠BOC, angle1=∠BOF, angle2=∠COF},LinePerpRelation{line1=CF, line2=OF, crossPoint=F},ProveConclusionRelation:[Proof: RectangleRelation{rectangle=Rectangle:CDOF}]

867, topic: FIG known \$ △ABC \$ AD is the angle bisector, \$ BE⊥AD \$, \$ CF⊥AD \$, BF extended line with the EC at point P, AP link Proof: \$ CF //AP \$.

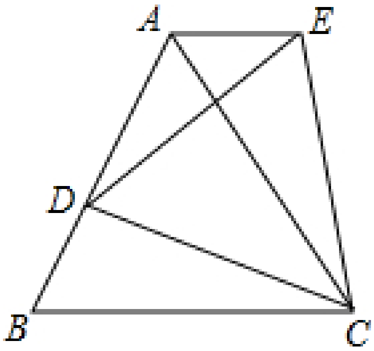


graph:
{"stem":{"pictures":[{"picturename":"1000004698.jpg","coordinates":{"A":"7.90,7.82","B":"1.81,2.13","C"

:"8.81,2.13","D":"5.95,2.13","E":"5.52,0.86","F":"6.25,3.01","P":"16.21,4.98"},"collineations":{"0":"B###C###D","1":"B###P###F","2":"P###C###E","3":"B###A","4":"C###F","5":"P###A","6":"E###B","7":"F###A###D###E","8":"C###A"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleRelation:△ABC,LinePerpRelation{line1=BE, line2=AD, crossPoint=E},LinePerpRelation{line1=CF, line2=AD, crossPoint=F},LineCrossRelation [crossPoint=Optional.of(P), iLine1=BF, iLine2=EC],SegmentRelation:AP,AngleBisectorRelation{line=AD,angle=∠BAC, angle1=∠CAD, angle2=∠BAD},ProveConclusionRelation:[Proof: LineParallelRelation [iLine1=CF, iLine2=AP]]

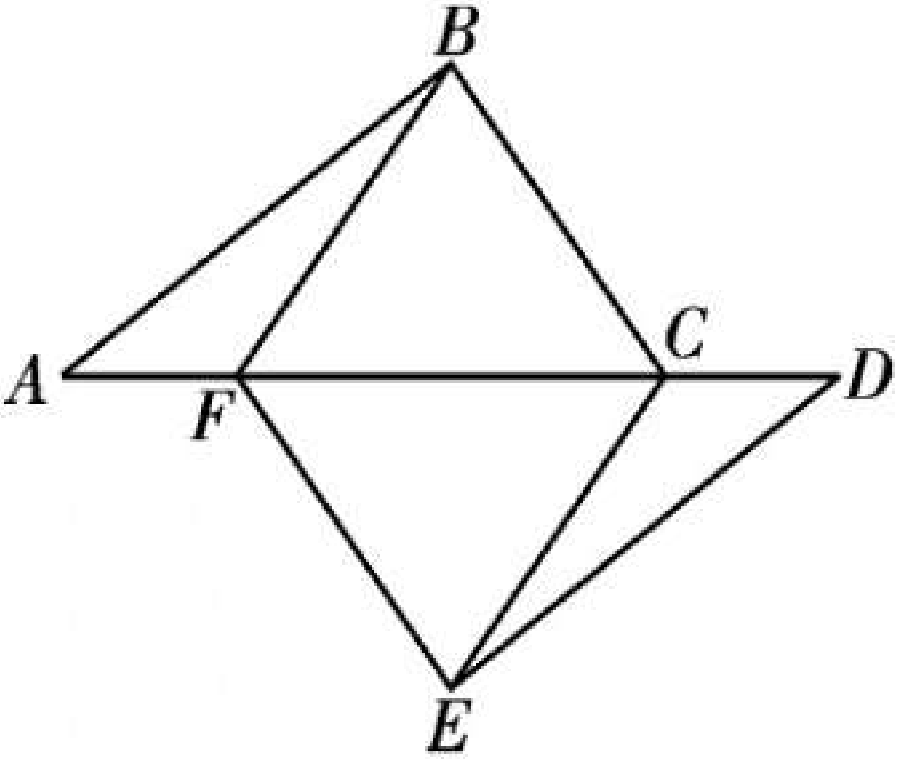
868, topic: FIG, △ABC is an equilateral triangle, D is the point on side AB, CD in an equilateral triangle as an edge for the CDE, so that point E, A DC at the same side of the straight line, connecting AE, Proof: AE∥ BC. #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000063604_Q_1.jpg","coordinates":{"A":"3.00,5.20","B":"0.00,0.00","C":"6.00,0.00","D":"1.12,1.94","E":"5.25,5.20"},"collineations":{"0":"D###E","1":"C###E","2":"B###C","3":"D###C","4":"A###C","5":"A###E","6":"A###D###B"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: RegularTriangleRelation:RegularTriangle:△ABC,PointOnLineRelation{point=D, line=AB, isConstant=false, extension=false},RegularTriangleRelation:RegularTriangle:△CDE,PointOnLineSameSideRelation{pointSet=[E, A], line=DC},SegmentRelation:AE,ProveConclusionRelation:[Proof: LineParallelRelation [iLine1=AE, iLine2=BC]]

869, topic: FIG known points A, F, C, D in the same line, points B and E, respectively, at both sides of the straight line AD, and \$ AB =DE \$, ∠ \$ A =∠D \$, \$ AF =DC \$ #% # (1) Prove:? BCEF quadrilateral is a parallelogram;% # # (2) when the \$ ∠ABC =90 ° \$\$, AB =4 \$, \$ BC =3 \$, when? why the AF value, BCEF quadrilateral is a rhombus.

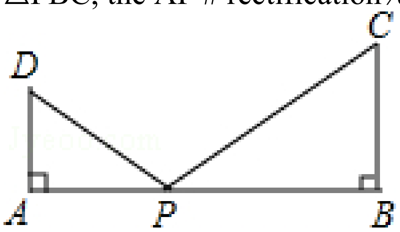


graph:

{"stem":{"pictures":[{"picturename":"1000004752_Q_1.jpg","coordinates":{"A":"-1.50,0.00","B":"2.30,2.75","C":"3.50,0.00","D":"5.00,0.00","E":"1.20,-2.75","F":"0.00,0.00"},"collineations":{"0":"A###F###C###D","1":"B###A","2":"B###F","3":"B###C","4":"E###F","5":"E###C","6":"E###D"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[{},{"questionrelies":"1"}]}

NLP: PointRelation:A,PointRelation:F,PointRelation:C,PointOnLineDifferentSideRelation{point1=B, point2=E, line=AD},EqualityRelation{AB=DE},EqualityRelation{∠BAF=∠CDE},EqualityRelation{AF=CD},EqualityRelation{∠ABC=(1/2*Pi)},EqualityRelation{AB=4},EqualityRelation{BC=3},RhombusRelation{rhombus=Rhombus:BCEF},Calculation:(ExpressRelation:[key:]AF),ProveConclusionRelation:[Proof: ParallelogramRelation{parallelogram=Parallelogram:BCEF}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]AF)}

870, topic: FIG known ∠A =∠B =90 °, AB =7, AD =2, BC =3, the point P on AB, and △PAD∽△PBC, the AP # rectification%. # <img>



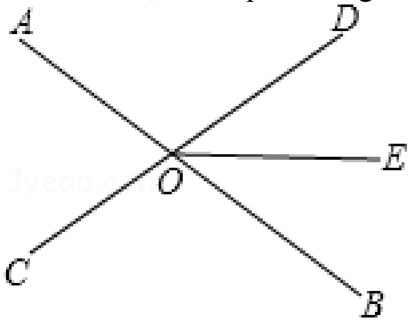
graph:

{"stem":{"pictures":[{"picturename":"1000035311_Q_1.jpg","coordinates":{"A":"0.00,0.00","B":"7.00,0.00","C":"7.00,3.00","D":"0.00,2.00","P":"2.80,0.00"},"collineations":{"0":"A###P###B","1":"A###D","2":"D###P","3":"C###P","4":"C###B"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: EqualityRelation{AP=v_0},MultiEqualityRelation [multiExpressCompare=∠DAP=∠CBP=(1/2*Pi), originExpressRelationList=[], keyWord=null,

result=null],EqualityRelation{AB=7},EqualityRelation{AD=2},EqualityRelation{BC=3},PointOnLineRelation{point=P, line=AB, isConstant=false, extension=false},TriangleSimilarRelation{triangleA=△PAD, triangleB=△PBC},Calculation:(ExpressRelation:[key:]v_0),SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]AP)}

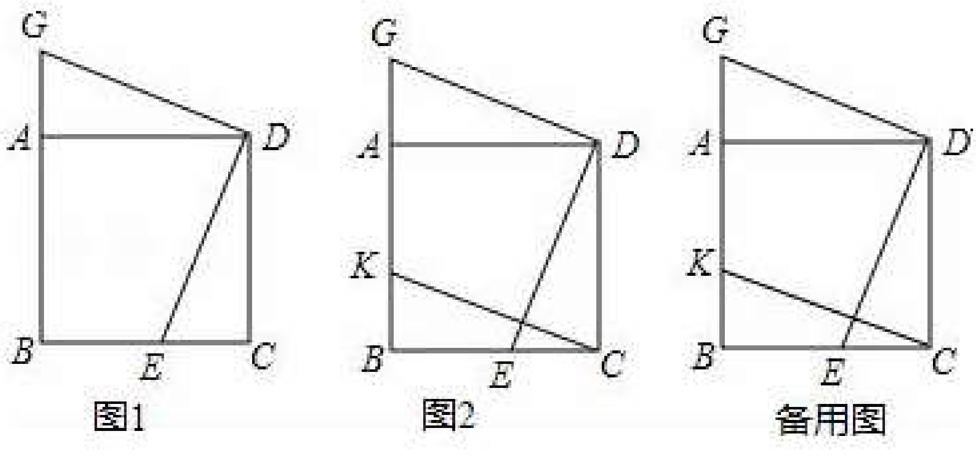
871, topic: As shown, the straight line AB, CD intersect at point O, OE equally ∠BOD, ∠AOD-∠AOC =20 °, the required degree ∠AOE #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000030602_Q_1.jpg","coordinates":{"E":"-7.35,3.85","B":"-8.35,2.18","O":"-10.25,4.17","D":"-9.00,5.00","A":"-12.00,6.00","C":"-12.00,3.00"},"collineations":{"0":"C###O###D","1":"A###O###B","2":"O###E"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: LineCrossRelation [crossPoint =Optional.of (O), iLine1 =AB, iLine2 =CD], AngleBisectorRelation {line =OE, angle =∠BOD, angle1 =∠BOE, angle2 =∠DOE}, EqualityRelation {∠AOD-∠ AOC =(1/9 * Pi)}, find the size of the angle: AngleRelation {angle =∠AOE}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] ∠AOE)}

872, topic: 1, quadrangle ABCD is a square, the BC on point E, point D as DG⊥DE cross over an extension line BA in G #% # (1) Prove:. DE =DG; #% # (2) 2 to a line segment DE, DG is the side to the square DEFG, point K on AB and BK =AG, connecting KF, draw graphics, quadrangular CEFK guess what special quadrilateral, and prove your guess; # % # (3) under the condition (2) when the $ \ frac {{CE}}{{CB}} =\ frac {m} $ when {n}, directly write a $ \ frac {{{S_ { {square \ rm {ABCD}}}}}} {{{S _ {{square \ rm {DEFG}}}}}} $ value. #% # <img>

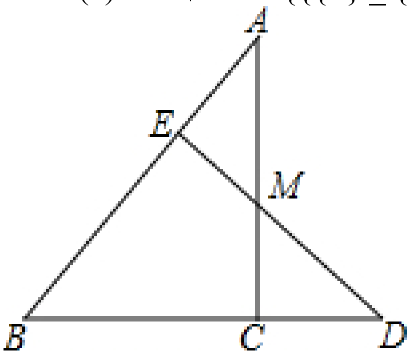


graph:
{"stem":{"pictures":[],"appliedproblems":{}},"substems":[{"substemid":"1","questionrelies":"","pictures":[{"picturename":"1000041540_Q_1.jpg","coordinates":{"A":"0.00,3.00","B":"0.00,0.00","C":"3.00,0.00","D

":"3.00,3.00","E":"1.72,0.00","G":"0.00,4.28"},"collineations":{"0":"G###A###B","1":"B###E###C","2":"C###D","3":"D###A","4":"D###G","5":"D###E"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},{"substemid":"2","questionrelies":"","pictures":[{"picturename":"1000041540_Q_1.jpg","coordinates":{"A":"0.00,-2.00","B":"0.00,-5.00","C":"3.00,-5.00","D":"3.00,-2.00","E":"1.69,-5.00","K":"0.00,-3.69","G":"0.00,-0.69"},"collineations":{"0":"G###A###K###B","1":"B###E###C","2":"C###D","3":"D###A","4":"D###G","5":"D###E","6":"C###K"},"variable-equals":{},"circles":[]}],"appliedproblems":{}}]}

NLP: SquareRelation{square=Square:ABCD},PointOnLineRelation{point=E, line=BC, isConstant=false, extension=false},LinePerpRelation{line1=DG, line2=DE, crossPoint=D},LineCrossRelation [crossPoint=Optional.of(G), iLine1=DG, iLine2=BA],PointOnLineRelation{point=D, line=DG, isConstant=false, extension=false},PointOnLineRelation{point=K, line=AB, isConstant=false, extension=false},EqualityRelation{BK=AG},SegmentRelation:KF,Calculation:(ExpressRelation:[key:]((((S_()))))/(((S_())))))),ProveConclusionRelation:[Proof: EqualityRelation{DE=DG}],ShapeJudgeConclusionRelation{geoEle=CEFK},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]((((S_()))))/(((S_()))))))}

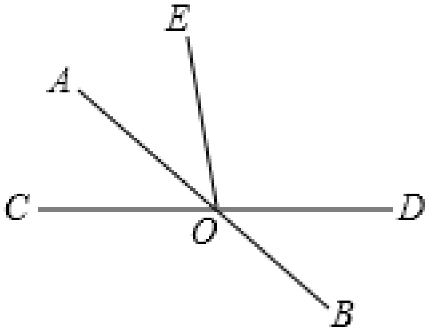
873, topic: FIG, △ABC, M is the midpoint of the AC, E is the edge point AB, and $ AE =\ frac {1} {4} AB $, connecting EM, EM to extend an extension line meets BC . at point D #% # (1) Proof: BC =2CD; #% # (2) find $ \ frac {{{S} _ {\ vartriangle MCD}}} {{{S} _ {\ vartriangle ABC} }} $ value. #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000062110_Q_1.jpg","coordinates":{"A":"7.00,12.93","B":"3.00,6.00","C":"7.00,6.00","D":"9.00,6.00","E":"6.00,11.20","M":"7.00,9.46"},"collineations":{"0":"A###E###B","1":"B###C###D","2":"D###M###E","3":"A###M###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleRelation:△ABC,MiddlePointOfSegmentRelation{middlePoint=M,segment=AC},PointOnLineRelation{point=E, line=AB, isConstant=false, extension=false},EqualityRelation{AE=(1/4)*AB},SegmentRelation:EM,LineCrossRelation [crossPoint=Optional.of(D), iLine1=EM, iLine2=BC],Calculation:(ExpressRelation:[key:]S_△CDM)/S_△ABC),ProveConclusionRelation:[Proof: EqualityRelation{BC=2*CD}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]S_△CDM)/S_△ABC)}

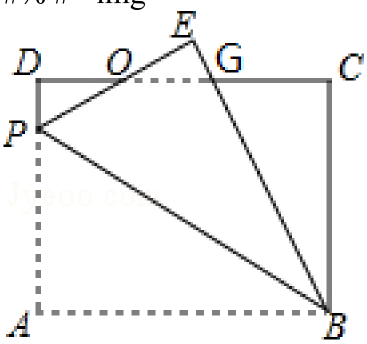
874, topic: As shown, the straight line AB, CD intersect at point O, equally if OA ∠COE, ∠EOD =100 °, the required degree ∠AOE #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000081785_Q_1.jpg","coordinates":{"A":"-3.18,2.66","B":"2.76,-2.31","C":"-4.00,0.00","D":"4.00,0.00","E":"-0.69,3.94","O":"0.00,0.00"},"collineations":{"0":"B###O###A","1":"D###O###C","2":"E###O"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: LineCrossRelation [crossPoint =Optional.of (O), iLine1 =AB, iLine2 =CD], AngleBisectorRelation {line =OA, angle =∠COE, angle1 =∠AOC, angle2 =∠AOE}, EqualityRelation {∠DOE =(5/9 * Pi)}, find the size of the angle: AngleRelation {angle =∠AOE}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] ∠AOE)}

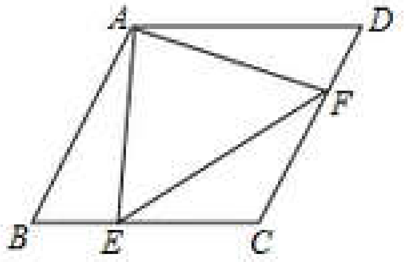
875, topic: ,, as shown in the rectangle ABCD, AB =8, BC =6, P is a point along the △ABP △EBP BP folded to the AD, PE and CD intersect at point O, and OE =OD, BE deposit CD at point G, a long seek AP. #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000031195_Q_1.jpg","coordinates":{"A":"-7.00,2.00","B":"-3.00,2.00","C":"-3.00,5.00","D":"-7.00,5.00","E":"-5.29,6.06","G":"-4.69,5.00","O":"-6.38,5.00","P":"-7.00,4.39"},"collineations":{"0":"A###P###D","1":"A###B","2":"P###O###E","3":"D###O###G###C","4":"B###C","5":"B###G###E","6":"B###P"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: EqualityRelation{AP=v_0},RectangleRelation{rectangle=Rectangle:ABCD},EqualityRelation{AB=8},EqualityRelation{BC=6},PointOnLineRelation{point=P, line=AD, isConstant=false, extension=false},TurnoverRelation{start=A, segment=BP,target=E},LineCrossRelation [crossPoint=Optional.of(O), iLine1=PE, iLine2=CD],EqualityRelation{EO=DO},LineCrossRelation [crossPoint=Optional.of(G), iLine1=BE, iLine2=CD],Calculation:(ExpressRelation:[key:]v_0),SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]AP)}

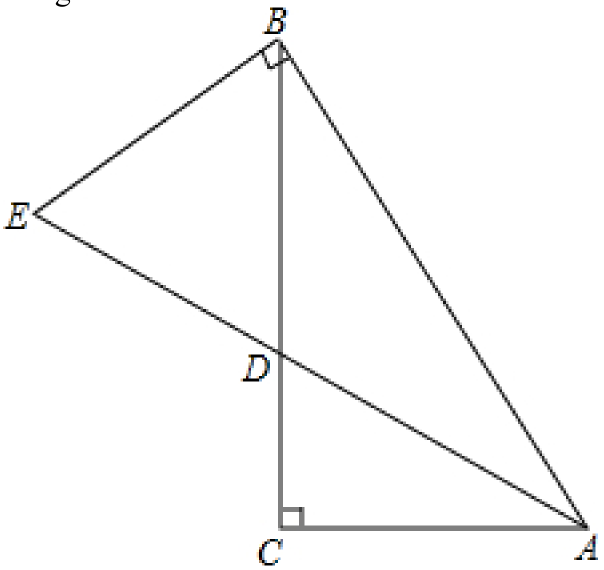
876, topic: FIG, in known diamond ABCD, E, F are CB, point on the CD, and BE =DF Proof:. ∠AEF =∠AFE #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000041806_Q_1.jpg","coordinates":{"A":"-11.63,6.03","B":"-13.78,3.45","C":"-10.18,3.40","D":"-8.63,5.97","E":"-12.53,3.44","F":"-8.96,5.42"},"collineations":{"0":"E###F","1":"D###F###C","2":"A###D","3":"B###E###C","4":"A###B","5":"A###E","6":"A###F"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: RhombusRelation{rhombus=Rhombus:ABCD},PointOnLineRelation{point=E, line=CB, isConstant=false, extension=false},PointOnLineRelation{point=F, line=CD, isConstant=false, extension=false},EqualityRelation{BE=DF},ProveConclusionRelation:[Proof: EqualityRelation{∠AEF=∠AFE}]

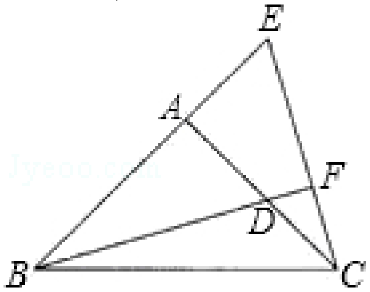
877, topic: As shown in the △ABC, ∠C =90 °, AD is the bisector of the angle, through the point B as BA and an extension line of the perpendicular AD intersect at points E, Proof: △BDE isosceles . #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000030944_Q_1.jpg","coordinates":{"A":"-6.00,2.00","B":"-9.00,6.00","C":"-9.00,2.00","D":"-9.00,3.50","E":"-11.00,4.50"},"collineations":{"0":"B###A","1":"A###D###E","2":"C###D###B","3":"B###E","4":"C###A"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: LinePerpRelation{line1=EB, line2=BA, crossPoint=B},TriangleRelation:△ABC,EqualityRelation{∠ACD=(1/2*Pi)},AngleBisectorRelation{line=AD,angle=∠BAC, angle1=∠CAD, angle2=∠BAD},LineCrossRelation [crossPoint=Optional.of(E), iLine1=AD, iLine2=EB],PointOnLineRelation{point=B, line=EB, isConstant=false, extension=false},ProveConclusionRelation:[IsoscelesTriangleRelation:IsoscelesTriangle:△BDE[Optional.of(B)]]

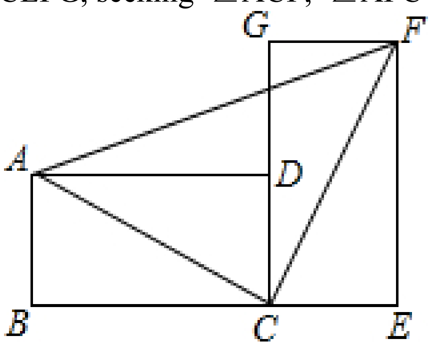
878, topic: FIG, ∠BAC =90 °, AB =AC, point D on the AC, the point E on the extension line of BA, BD =CE, BD CE extension lines cross at point F, confirmation: BF⊥ CE. #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000031287_Q_1.jpg","coordinates":{"A":"-7.00,4.00","B":"-9.00,2.00","C":"-5.00,2.00","D":"-5.75,2.75","E":"-5.75,5.25","F":"-5.20,2.87"},"collineations":{"0":"B###D###F","1":"E###A###B","2":"A###D###C","3":"B###C","4":"E###F###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: EqualityRelation{∠BAD=(1/2*Pi)},EqualityRelation{AB=AC},PointOnLineRelation{point=D, line=AC, isConstant=false, extension=false},PointOnLineRelation{point=E, line=BA, isConstant=false, extension=true},EqualityRelation{BD=CE},LineCrossRelation [crossPoint=Optional.of(F), iLine1=BD, iLine2=CE],ProveConclusionRelation:[Proof: LinePerpRelation{line1=BF, line2=CE, crossPoint=F}]

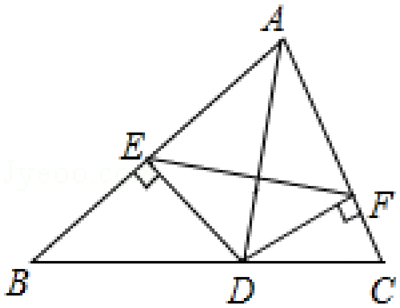
879, topic: as shown, the two congruent rectangles ABCD and a rectangular pattern as shown makes up CEFG, seeking ∠ACF, ∠AFC degree #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000050613_Q_1.jpg","coordinates":{"A":"-8.00,5.00","B":"-8.00,3.00","C":"-4.00,3.00","D":"-4.00,5.00","E":"-2.00,3.00","F":"-2.00,7.00","G":"-4.00,7.00"},"collineations":{"0":"G###D###C","1":"B###C###E","2":"D###A","3":"A###B","4":"E###F","5":"G###F","6":"A###F","7":"C###F","8":"A###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: R_QuadrilateralCong: Rectangle: ABCD, Rectangle: CEFG, the size of the required angle: AngleRelation {angle =∠ACF}, ANGULAR size: AngleRelation {angle =∠AFC}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation : [key:] ∠ACF)}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] ∠AFC)}

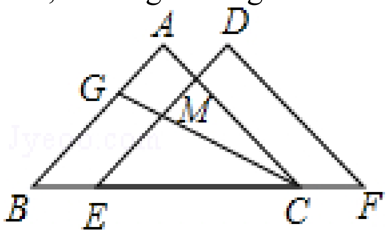
880, topic: FIG, AD is the bisector of △ABC, DE, DF are high △ABD and △ACD Verification of:.. AD perpendicular bisector EF #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000027222_Q_1.jpg","coordinates":{"A":"5.00,4.00","B":"1.00,0.00","C":"6.07,0.00","D":"3.93,0.00","E":"2.46,1.46","F":"5.93,0.54"},"collineations":{"0":"E###D","1":"D###F","2":"E###F","3":"A###D","4":"A###E###B","5":"B###D###C","6":"A###F###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP:
TriangleRelation:△ABC,TriangleRelation:△ABD,TriangleRelation:△ACD,AngleBisectorRelation{line=AD,angle=∠EAF, angle1=∠DAF, angle2=∠DAE},LinePerpRelation{line1=DE, line2=BE, crossPoint=E},LinePerpRelation{line1=DF, line2=AF, crossPoint=F},ProveConclusionRelation:[MiddlePerpendicularRelation [iLine1=AD, iLine2=EF, crossPoint=Optional.absent()]]

881, topic: FIG., Point E, C in the BF, $ BE =FC $, $ ∠ABC =∠DEF =45 ° $, $ ∠A =∠D =90 ° $ #% # (1).? Prove:? $ AB =DE $; #% # (2) when the AC control DE in and M, and $ AB =\ sqrt {3} $, $ ME =\ sqrt {2} $, line segment CE about the point C cis clockwise, so that the rotation point E to G of the AB, seeking the degree of the rotation angle $ ∠ECG $.

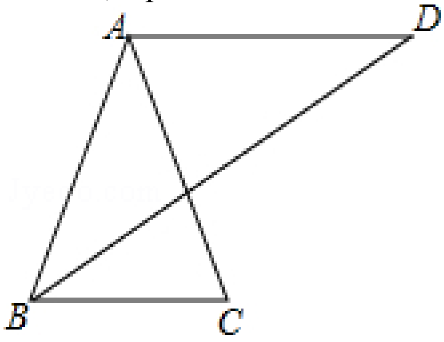


graph:
{"stem":{"pictures":[{"picturename":"1000026424_Q_1.jpg","coordinates":{"A":"1.50,1.50","B":"0.00,0.00","C":"3.00,0.00","D":"2.50,1.50","E":"1.00,0.00","F":"4.00,0.00","G":"0.64,0.64","M":"1.42,0.42"},"collineations":{"0":"A###G###B","1":"B###E###C###F","2":"D###F","3":"D###M###E","4":"C###A","5":"G###M###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: PointOnLineRelation{point=E, line=BF, isConstant=false, extension=false},PointOnLineRelation{point=C, line=BF, isConstant=false, extension=false},EqualityRelation{BE=CF},MultiEqualityRelation [multiExpressCompare=∠EBG=∠CEM=(1/4*Pi), originExpressRelationList=[], keyWord=null, result=null],MultiEqualityRelation [multiExpressCompare=∠CAG=∠FDM=(1/2*Pi), originExpressRelationList=[], keyWord=null, result=null],LineCrossRelation [crossPoint=Optional.of(M), iLine1=AC, iLine2=DE],EqualityRelation{AB=(3^(1/2))},EqualityRelation{EM=(2^(1/2))},ConstantPointOnLineRelation [line=StraightLine[CE] analytic :y=k_CE*x+b_CE slope:null b:null isLinearFunction:false, point=C],PointOnLineRelation{point=E, line=AB, isConstant=false, extension=false},PointCoincidenceRelation{point1=E, point2=G},Calculation:AngleRelation{angle=∠ECM},ProveConclusionRelation:[Proof: EqualityRelation{AB=DE}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]∠

ECM)}

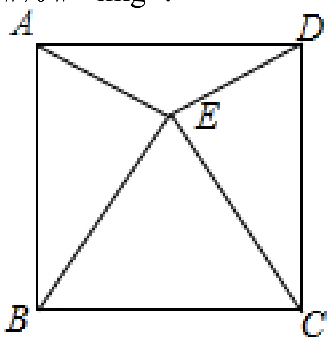
882, topic: FIG known that AB =AC =AD, and AD // BC, Proof: . ∠C =2∠D #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000030926_Q_1.jpg","coordinates":{"A":"-7.00,4.00","B":"-7.96,1.22","C":"-5.99,1.22","D":"-4.00,4.00"},"collineations":{"0":"B###A","1":"A###C","2":"C###B","3":"D###B","4":"A###D"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: MultiEqualityRelation [multiExpressCompare=AB=AC=AD, originExpressRelationList=[], keyWord=null, result=null],LineParallelRelation [iLine1=AD, iLine2=BC],ProveConclusionRelation:[Proof: EqualityRelation{∠ACB=2*∠ADB}]

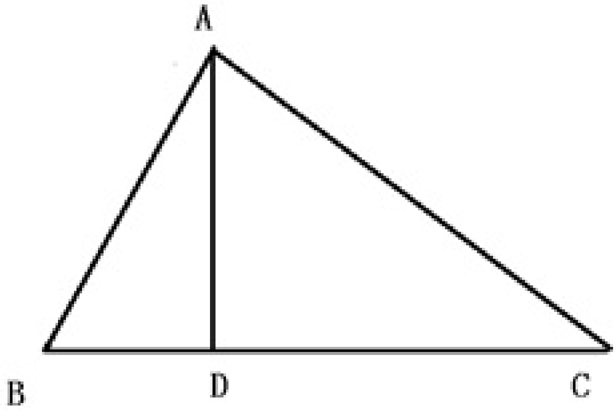
883, topic: FIG, quadrangle ABCD is a square, △CBE equilateral triangle, the demand degree ∠AEB #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000050590_Q_1.jpg","coordinates":{"A":"-7.00,7.00","B":"-7.00,3.00","C":"-3.00,3.00","D":"-3.00,7.00","E":"-5.00,6.46"},"collineations":{"0":"A###E","1":"B###E","2":"C###B","3":"D###C","4":"A###B","5":"C###E","6":"D###E","7":"A###D"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: SquareRelation {square =Square: ABCD}, RegularTriangleRelation: RegularTriangle: △CBE, ANGULAR size: AngleRelation {angle =∠AEB}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] ∠AEB)}

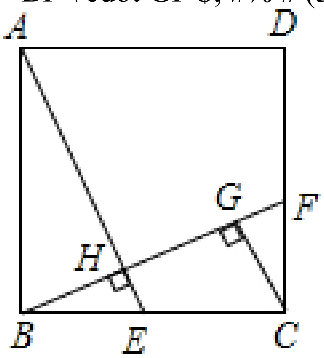
884, topic: the $ \ vartriangle ABC $ in, $ AD \ bot BC $ at point D, $ AB =25 $, $ AC =30 $, $ AD =24 $, again determined $ \ vartriangle ABC $ shape



graph:
{"stem":{"pictures":[{"picturename":"1000001382_Q_1.jpg","coordinates":{"A":"0.00,0.00","B":"20.00,0.00","C":"20.00,15.00"},"collineations":{"0":"A###D","1":"A###C","2":"A###B","3":"C###D###B"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[{"substemid":"1","questionrelies":"2","pictures":[],"appliedproblems":{}},{"substemid":"2","questionrelies":"1","pictures":[],"appliedproblems":{}}]}

NLP: TriangleRelation: △ABC, LinePerpRelation {line1 =AD, line2 =BC, crossPoint =D}, EqualityRelation {AB =25}, EqualityRelation {AC =30}, EqualityRelation {AD =24}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] AB)}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] BC)}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key :] AC)}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] ∠ABC)}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] ∠ACB)}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] ∠BAC)}

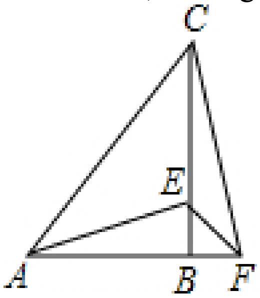
885, topic: As shown in the square ABCD, E is a point on the BC, the connection AE, for BF⊥AE, pedal is H, F. In cross-CD, for CG∥AE, G. cross-BF to Proof: # % # (1) CG =BH; #% # (2) $ {FC} ^ 2 =BF \ cdot GF $; #% # (3) $ \ frac {{FC} ^ 2} {{AB} ^ 2 } =\ frac {GF} {GB} $. #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000062212_Q_1.jpg","coordinates":{"A":"-11.03,0.00","B":"-11.03,-4.02","C":"-7.01,-4.02","D":"-7.01,0.00","E":"-9.34,-4.02","F":"-7.01,-2.30","G":"-7.63,-2.57","H":"-9.60,-3.41"},"collineations":{"0":"A###B","1":"C###G","2":"A###D","3":"B###E###C","4":"C###F###D","5":"A###H###E","6":"B###H###G###F"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: SquareRelation{square=Square:ABCD},PointOnLineRelation{point=E, line=BC, isConstant=false, extension=false},SegmentRelation:AE,LinePerpRelation{line1=BF, line2=AE, crossPoint=H},LineCrossRelation [crossPoint=Optional.of(F), iLine1=BF, iLine2=CD],LineParallelRelation [iLine1=CG, iLine2=AE],LineCrossRelation [crossPoint=Optional.of(G), iLine1=CG, iLine2=BF],ProveConclusionRelation:[Proof: EqualityRelation{CG=BH}],ProveConclusionRelation:[Proof: EqualityRelation{(CF)^2=BF*FG}],ProveConclusionRelation:[Proof: EqualityRelation{(((CF)^2)/((AB)^2))=((FG)/(BG))}]

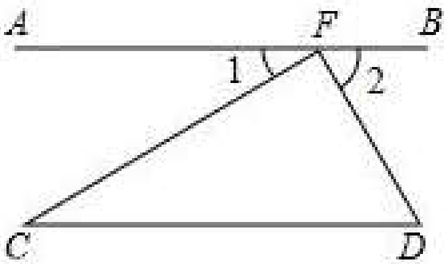
886, topic: Given: As shown in the △ABC, AB =BC, ∠ABC =90 °, F is a point on an extension line AB, the point E on BC, BE =BF, connected AE, EF and CF. % # # (1) Proof: AE =CF; #% # (2) if ∠CAE =30 °, the degree of seeking ∠EFC #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000063717_Q_1.jpg","coordinates":{"A":"-4.00,0.00","B":"0.00,0.00","C":"0.00,4.00","E":"0.00,1.00","F":"1.00,0.00"},"collineations":{"0":"A###F###B","1":"B###E###C","2":"C###F","3":"A###C","4":"A###E","5":"F###E"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleRelation:△ABC,EqualityRelation{AB=BC},EqualityRelation{∠ABE=(1/2*Pi)},PointOnLineRelation{point=F, line=AB, isConstant=false, extension=true},PointOnLineRelation{point=E, line=BC, isConstant=false, extension=false},EqualityRelation{BE=BF},SegmentRelation:AE,SegmentRelation:EF,EqualityRelation{∠CAE=(1/6*Pi)},Calculation:AngleRelation{angle=∠CFE},ProveConclusionRelation:[Proof: EqualityRelation{AE=CF}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]∠CFE)}

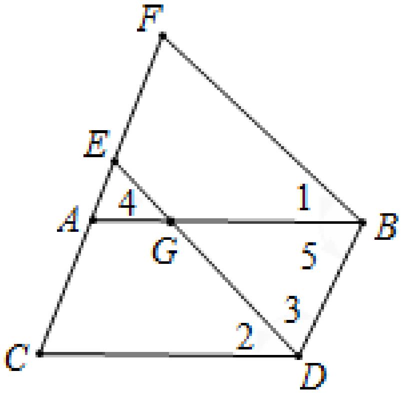
887, topic: figure, known $ \ angle 1 $ and $ \ angle D $ Remainder, $ CF \ bot DF $, confirmation: $ AB \ parallel CD $.



graph:
{"stem":{"pictures":[{"picturename":"1000032959_Q_1.jpg","coordinates":{"A":"1.50,-1.80","B":"16.50,-1.80","C":"1.70,-8.50","D":"16.60,-8.50","F":"12.80,-1.80"},"collineations":{"0":"A###F###B","1":"D###F","2":"C###F","3":"C###D"},"variable-equals":{"0":"∠1=∠AFC","1":"∠2=∠BFD"},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: AngleComplementRelation:∠AFC/∠CDF,LinePerpRelation{line1=CF, line2=DF, crossPoint=F},ProveConclusionRelation:[Proof: LineParallelRelation [iLine1=AB, iLine2=CD]]

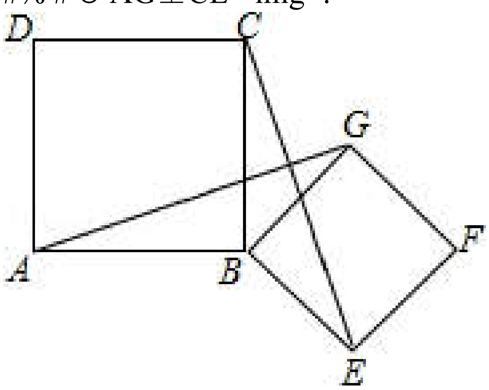
888, topic: FIG, ∠1 =∠2, ∠5 =∠C, ∠C + ∠CDB =180 °, Proof: . DE // BF #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000050442_Q_1.jpg","coordinates":{"A":"-6.00,4.00","B":"-2.00,4.00","C":"-7.00,2.00","D":"-3.00,2.00","E":"-5.57,4.85","F":"-4.57,6.85","G":"-4.81,4.00"},"collineations":{"0":"C###A###E###F","1":"B###F","2":"D###B","3":"D###C","4":"A###G###B","5":"E###G###D"},"variable-equals":{"0":"∠1=∠FBA","1":"∠2=∠CDE","2":"∠3=∠EDB","3":"∠4=∠EGA","4":"∠5=∠ABD"},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: EqualityRelation{∠FBG=∠CDG},EqualityRelation{∠DBG=∠ACD},EqualityRelation{∠ACD+∠BDC=(Pi)},ProveConclusionRelation:[Proof: LineParallelRelation [iLine1=DE, iLine2=BF]]

889, topic: FIG quadrangle ABCD, BEFG are square, connected AG, CE, Proof: #% # ① AG =CE; #% # ② AG⊥CE <img>.

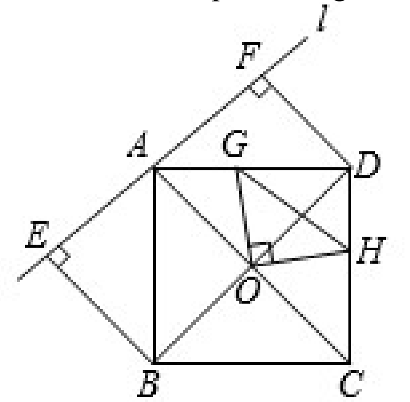


graph:
{"stem":{"pictures":[{"picturename":"1000030761_Q_1.jpg","coordinates":{"A":"-12.00,3.00","B":"-8.00,3.00","C":"-8.00,7.00","D":"-12.00,7.00","E":"-6.00,1.00","F":"-4.00,3.00","G":"-6.00,5.00"},"collineations":{"0":"A###D","1":"A###B","2":"B###C","3":"C###D","4":"B###E","5":"E###F","6":"F###G","7":"G###B","8":"A###G","9":"C###E","10":"E###D"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: SquareRelation{square=Square:ABCD},SquareRelation{square=Square:BEFG},SegmentRelation:AG,SegmentRelation:CE,ProveConclusionRelation:[Proof: EqualityRelation{AG=CE}],ProveConclusionRelation:[Proof: LinePerpRelation{line1=AG, line2=CE, crossPoint=}]

890, topic: As shown, the straight line L $ $ $ through the square ABCD $ vertices A, respectively, through this vertices of a square B, D $ BE⊥l $ as at point E, $ DF⊥l $ at point F.?# % # (1) Proof: $ BE

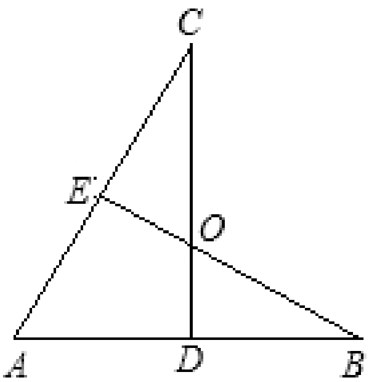
+ DF =EF $; #% # (2) the intersection of a square diagonal O endpoint, cited two perpendicular rays respectively AD, CD intersect at G, H? two, if $ EF =2 $, $ {{S} _ {\ vartriangle ABE}} =\ frac {1} {2} $, the minimum required length of the line segment GH.



graph:
{"stem":{"pictures":[{"picturename":"1000027741_Q_1.jpg","coordinates":{"A":"3.00,5.00","B":"3.00,1.00","C":"7.00,1.00","D":"7.00,5.00","E":"1.00,3.00","F":"5.00,7.00","O":"5.00,3.00"},"collineations":{"0":"D###F","1":"B###E","2":"B###C","3":"E###A###F","5":"A###O###C","6":"B###O###D","7":"A###B","8":"A###D","9":"C###D"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: PointOnLineRelation{point=A, line=StraightLine[l] analytic :y=k_l*x+b_l slope:null b:null isLinearFunction:false, isConstant=false, extension=false},SquareRelation{square=Square:ABCD},SquareRelation{square=Square:ABCD},PointOnLineRelation{point=B, line=BE, isConstant=false, extension=false},PointOnLineRelation{point=D, line=DF, isConstant=false, extension=false},LinePerpRelation{line1=AE, line2=BE, crossPoint=E},LinePerpRelation{line1=EF, line2=DF, crossPoint=F},EqualityRelation{GH=v_0},SquareRelation{square=Square:ABCD},PointRelation:O,EqualityRelation{EF=2},EqualityRelation{S_△ABE)=(1/2)},Minimum:(ExpressRelation:[key:]v_0[v_0=v_0]),ProveConclusionRelation:[Proof: EqualityRelation{BE+DF=EF}],SolutionConclusionRelation{relation=Minimum:(ExpressRelation:[key:]v_0[v_0=v_0])}

891, topic: FIG known CD⊥AB in D, BE⊥AC cross-BE in E, CD point O at point O. In the bisector ∠BAC, confirmation test: OC =OB #% # <img. >

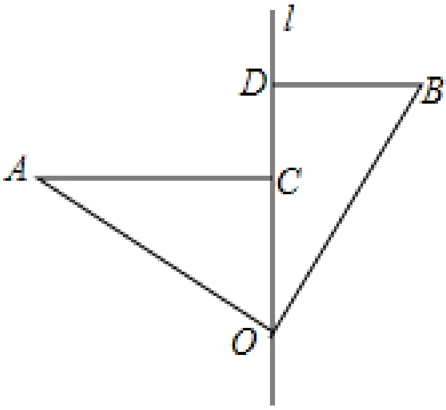


graph:
{"stem":{"pictures":[{"picturename":"1000032847_Q_1.jpg","coordinates":{"A":"0.00,0.00","B":"3.61,0.00","C":"1.78,3.14","D":"1.78,0.00","E":"0.88,1.55","O":"1.78,1.04"},"collineations":{"0":"A###D###B","1":"B###O###E","2":"A###E###C","3":"C###O###D"},"variable-equals":{},"circles":[]}],"appliedproblems":

{}},"substems":[]}

NLP: AngleBisectorRelation{line=M_0N_0,angle=∠DAE, angle1=∠DAM_0, angle2=∠EAM_0},LinePerpRelation{line1=CD, line2=AB, crossPoint=D},LinePerpRelation{line1=BE, line2=AC, crossPoint=E},LineCrossRelation [crossPoint=Optional.of(O), iLine1=CD, iLine2=BE],ProveConclusionRelation:[Proof: EqualityRelation{CO=BO}]

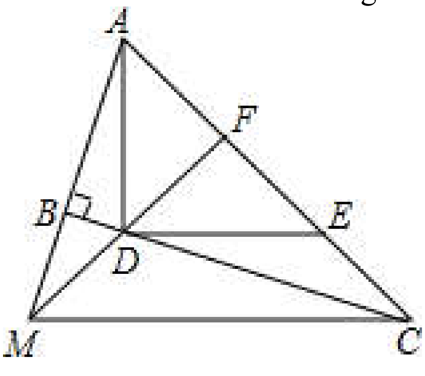
892, topic: FIG, ∠AOB =90 °, OA =OB, L $ $ straight through point O, respectively, through the A, B as two $ AC \ bot l $, $ BD \ bot l $, respectively pedal For C, D #% # confirmation: OC =BD #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000072642_Q_1.jpg","coordinates":{"A":"-10.00,5.00","B":"-4.00,7.00","C":"-6.00,5.00","D":"-6.00,7.00","O":"-6.00,3.00"},"collineations":{"0":"A###O","1":"A###C","2":"B###O","3":"B###D","4":"D###C###O"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: EqualityRelation{∠AOB=(1/2*Pi)},EqualityRelation{AO=BO},PointOnLineRelation{point=O, line=StraightLine[l] analytic :y=k_l*x+b_l slope:null b:null isLinearFunction:false, isConstant=false, extension=false},LinePerpRelation{line1=OC, line2=AC, crossPoint=C},LinePerpRelation{line1=OD, line2=BD, crossPoint=D},ProveConclusionRelation:[Proof: EqualityRelation{CO=BD}]

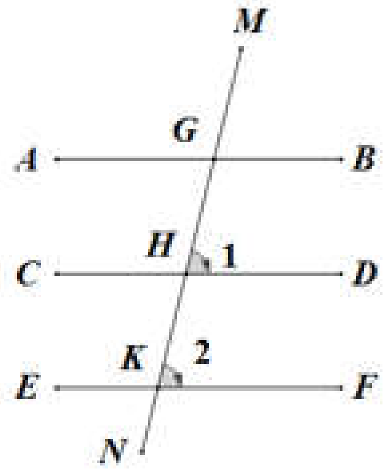
893, topic: FIG, ∠ABC =90 °, D, E, respectively, in the BC, AC, AD⊥DE, and AD =DE, AE is the midpoint of the point F, FD and AB at point M. (1) Proof: ∠FMC =∠FCM; (2) AD MC perpendicular to it and the reasons #% # <img>?.



graph:
{"stem":{"pictures":[{"picturename":"1000041564_Q_1.jpg","coordinates":{"A":"-8.00,6.00","B":"-8.60,4.20","C":"-5.00,3.00","D":"-8.00,4.00","E":"-6.00,4.00","F":"-7.00,5.00","M":"-9.00,3.00"},"collineations":{"0":"A###B###M","1":"A###D","2":"D###E","3":"M###D###F","4":"A###F###E###C","5":"M###C","6":"B###D###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: EqualityRelation{∠ABD=(1/2*Pi)},PointOnLineRelation{point=D, line=BC, isConstant=false, extension=false},PointOnLineRelation{point=E, line=AC, isConstant=false, extension=false},LinePerpRelation{line1=AD, line2=DE, crossPoint=D},EqualityRelation{AD=DE},MiddlePointOfSegmentRelation{middlePoint=F,segment=AE}, LineCrossRelation [crossPoint=Optional.of(M), iLine1=FD, iLine2=AB],ProveConclusionRelation:[Proof: EqualityRelation{∠CMD=∠ECM}],ProveConclusionRelation:[LinePerpRelation{line1=AD, line2=MC, crossPoint=}]

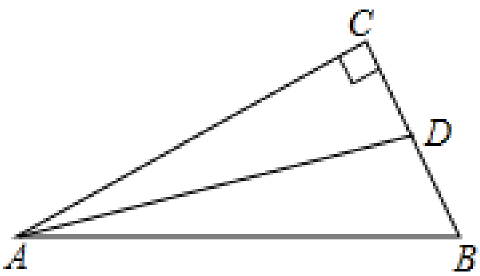
894, topic: As shown, the straight line MN, respectively, AB, CD, EF intersect at points G, H, K, ∠1 = ∠2, AB // EF Proof:. AB // CD #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000030552_Q_1.jpg","coordinates":{"A":"0.00,6.00","B":"7.00,6.00","C":"0.00,3.00","D":"7.00,3.00","E":"0.00,0.00","F":"7.00,0.00","M":"5.00,9.00","G":"4.25,6.00","H":"3.50,3.00","K":"2.75,0.00","N":"2.00,-3.00"},"collineations":{"0":"A###G###B","1":"C###H###D","2":"E###K###F","3":"M###G###H###K###N"},"variable-equals":{"0":"∠1=∠GHD","1":"∠2=∠HKF"},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: LineCrossRelation [crossPoint=Optional.of(G), iLine1=MN, iLine2=AB],LineCrossRelation [crossPoint=Optional.of(H), iLine1=MN, iLine2=CD],LineCrossRelation [crossPoint=Optional.of(K), iLine1=MN, iLine2=EF],EqualityRelation{∠DHG=∠FKH},LineParallelRelation [iLine1=AB, iLine2=EF],ProveConclusionRelation:[Proof: LineParallelRelation [iLine1=AB, iLine2=CD]]

895, topic: As shown in the △ABC, ∠C =90 °, AD equally ∠BAC, and ∠B =3∠BAD, seeking ∠ADC degree #% # <img>.

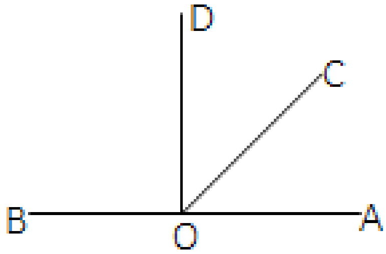


graph:
{"stem":{"pictures":[{"picturename":"1000035430_Q_1.jpg","coordinates":{"A":"0.00,0.00","B":"8.00,0.00","C":"5.24,3.80","D":"6.47,2.10"},"collineations":{"0":"D###A","1":"A###B","2":"B###D###C","3":"C##

#A"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleRelation: △ABC, EqualityRelation {∠ACD =(1/2 * Pi)}, AngleBisectorRelation {line =AD, angle =∠BAC, angle1 =∠BAD, angle2 =∠CAD}, EqualityRelation {∠ABD =3 * ∠BAD}, aNGULAR size: AngleRelation {angle =∠ADC}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] ∠ADC)}

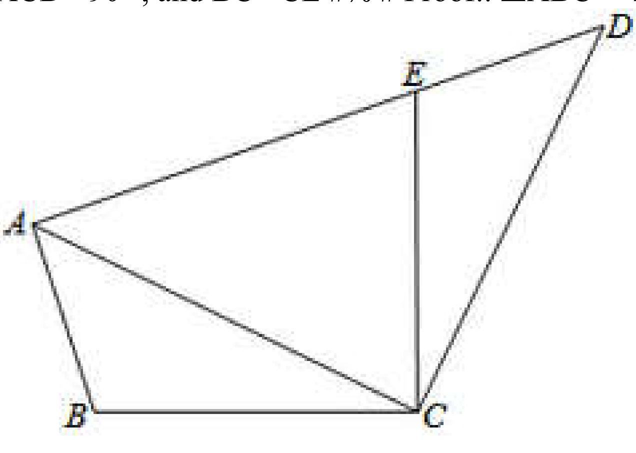
896, topic: FIG, O is the bit line AB, ∠BOC =3∠AOC, OC bisects ∠AOD #% # (1) the degree of demand ∠AOC; position #% # (2) with OD guess AB. relationship, and explain the reasons. #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"FC4F0F83EFE145B2B2AF59E16604DB7A.jpg","coordinates":{"A":"13.60,-8.30","B":"1.10,-8.30","C":"11.90,-3.10","D":"6.80,-0.80","O":"6.80,-8.30"},"collineations":{"0":"A###O###B","1":"D###O","2":"O###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[{"substemid":"2","questionrelies":"1","pictures":[],"appliedproblems":{}}]}

NLP: PointOnLineRelation{point=O, line=AB, isConstant=false, extension=false},EqualityRelation{∠BOC=3*∠AOC},AngleBisectorRelation{line=OC,angle=∠AOD, angle1=∠AOC, angle2=∠COD},Calculation:AngleRelation{angle=∠AOC},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]∠AOC)},JudgePostionConclusionRelation: [data1=OD, data2=AB]

897, topic: As shown, the quadrilateral ABCD, the point E on the AD, wherein ∠BAE =∠BCE =∠ACD =90 °, and BC =CE #% # Proof:. △ABC≌ △DEC #% # < img>

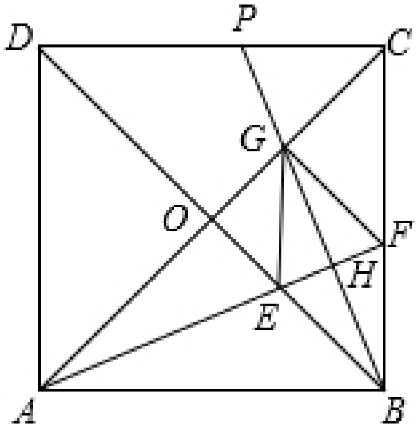


graph:
{"stem":{"pictures":[{"picturename":"1000072648_Q_1.jpg","coordinates":{"A":"0.14,-0.80","B":"0.37,-1.50","C":"1.58,-1.50","D":"2.27,-0.06","E":"1.58,-0.31"},"collineations":{"0":"A###B","1":"A###C","2":"B###C","3":"E###C","4":"C###D","5":"A###E###D"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: Know:QuadrilateralRelation{quadrilateral=ABCD},PointOnLineRelation{point=E, line=AD,

isConstant=false, extension=false},MultiEqualityRelation [multiExpressCompare=∠BAE=∠BCE=∠ACD=(1/2*Pi), originExpressRelationList=[], keyWord=null, result=null],EqualityRelation{BC=CE},ProveConclusionRelation:[Proof: TriangleCongRelation{triangleA=△ABC, triangleB=△DEC}]

898, topic: FIG square ABCD diagonal at point O, ∠CAB respectively cross the bisector BD, BC at points E, F, BH⊥AF as at point H, respectively, cross-AC, CD at point G ., P, connected to GE, GF #% # (1) Proof: △OAE≌△OBG #% # (2) ask:?. BFGE whether the diamond quadrilateral if yes, please prove; if not, please explain why #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"A9E6804B4A344F17808977B542D00AC1.jpg","coordinates":{"A":"-14.00,3.00","B":"-8.00,3.00","C":"-8.00,9.00","D":"-14.00,9.00","E":"-9.76,4.76","F":"-8.00,5.49","G":"-9.76,7.42","H":"-8.88,5.12","P":"-10.49,9.00","O":"-11.00,6.00"},"collineations":{"0":"B###A","1":"A###D","2":"E###H###F###A","3":"C###O###G###A","4":"B###F###C","5":"B###G###H###P","6":"B###D###O###E","7":"E###G","8":"G###F","9":"D###P###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[{"substemid":"2","questionrelies":"1","pictures":[],"appliedproblems":{}},{"substemid":"3","questionrelies":"1","pictures":[],"appliedproblems":{}}]}

NLP: SquareRelation{square=Square:ABCDintersection : O},AngleBisectorRelation{line=AH,angle=∠BAO, angle1=∠BAH, angle2=∠HAO},LinePerpRelation{line1=BH, line2=AF, crossPoint=H},LineCrossRelation [crossPoint=Optional.of(G), iLine1=BH, iLine2=AC],LineCrossRelation [crossPoint=Optional.of(P), iLine1=BH, iLine2=CD],SegmentRelation:GE,SegmentRelation:GF,ProveConclusionRelation:[Proof: TriangleCongRelation{triangleA=△OAE, triangleB=△OBG}],ProveConclusionRelation:[RhombusRelation{rhombus=Rhombus:BFGE}]

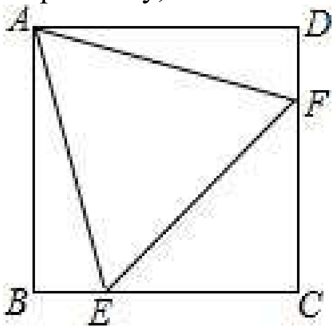
899, topic: As shown in the plane rectangular coordinate system, AB y axes cross at points C, connected OB.?#%#(1) ① shown in FIG known \$ A (-2,0) \$, \$ B (2,4) \$, \$ △AOB \$ seeking area;? #% # (2) shown in FIG. ② , point D on the x-axis, \$ ∠OBD =∠OBC \$, \$ seeking \ frac {\ angle BDA- \ angle BAD} {\ angle BOC} \$ value;? #% # (3) shown in FIG ③ , \$ BM⊥x \$ axis at point M, the y-axis point N, \$ ∠MNB =∠MBN \$, the point P in the x-axis

graph:
{"stem":{"pictures":[],"appliedproblems":{}},"substems":[{"substemid":"1","questionrelies":"","pictures":[{"picturename":"","coordinates":{"A":"0.15,-1.08","B":"0.89,-0.32","C":"0.50,-0.71","O":"0.50,-1.08"},"collineations":{"0":"O###A","1":"A###B###C","2":"O###B","3":"O###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},{"substemid":"2","questionrelies":"","pictures":[{"picturename":"","coordinates":{"A":"1.81,-1.12","B":"2.54,-0.36","C":"2.19,-0.73","D":"2.42,-1.12","O":"2.19,-1.12"},"collineations":{"0":

"A###B###C","1":"A###O###D","2":"D###B","3":"B###O","4":"O###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},{"substemid":"3","questionrelies":"","pictures":[{"picturename":"","coordinates":{"M":"3.93,-1.15","B":"3.93,-0.40","N":"3.58,-0.52","O":"3.58,-1.15","P":"4.58,-1.15"},"collineations":{"0":"N###B","1":"O###P###M","2":"O###N","3":"N###M","4":"N###P","5":"B###M"},"variable-equals":{},"circles":[]}],"appliedproblems":{}}]}

NLP: LineCrossRelation [crossPoint=Optional.of(C), iLine1=AB, iLine2=StraightLine[Y] analytic :x=0 slope: b: isLinearFunction:false],SegmentRelation:OB,EqualityRelation{S_△ABO=v_0},PointRelation:A(-2,0),PointRelation:B(2,4),Calculation:(ExpressRelation:[key:]v_0),PointOnLineRelation{point=D, line=StraightLine[X] analytic :y=0 slope:0 b:0 isLinearFunction:false, isConstant=false, extension=false},EqualityRelation{∠OBD=∠CBO},Calculation:(ExpressRelation:[key:]((∠BDA-∠BAD)/(∠BOC))),LinePerpRelation{line1=BM, line2=StraightLine[X] analytic :y=0 slope:0 b:0 isLinearFunction:false, crossPoint=M},PointOnLineRelation{point=N, line=StraightLine[Y] analytic :x=0 slope: b: isLinearFunction:false, isConstant=false, extension=false},EqualityRelation{∠MNB=∠MBN},PointOnLineRelation{point=P, line=StraightLine[X] analytic :y=0 slope:0 b:0 isLinearFunction:false, isConstant=false, extension=false},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]S_△ABO)},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]((∠BDA-∠BAD)/(∠BOC)))}

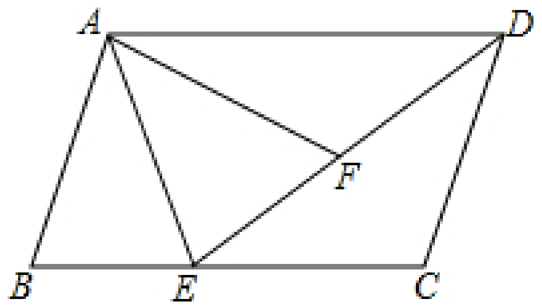
900, topic: Given: As shown in the square ABCD, the vertices of an equilateral triangle of E AEF, F, respectively, on the sides BC and CD Proof:. #% # $ \ Angle CEF =\ angle CFE $ #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000050883_Q_1.jpg","coordinates":{"A":"-7.00,5.00","B":"-7.00,2.00","C":"-4.00,2.00","D":"-4.00,5.00","E":"-6.20,2.00","F":"-4.00,4.20"},"collineations":{"0":"A###B","1":"B###E###C","2":"C###F###D","3":"D###A","4":"A###E","5":"E###F","6":"F###A"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP:
SquareRelation{square=Square:ABCD},RegularTriangleRelation:RegularTriangle:△AEF,PointOnLineRelation{point=E, line=BC, isConstant=false, extension=false},PointOnLineRelation{point=F, line=CD, isConstant=false, extension=false},ProveConclusionRelation:[Proof: EqualityRelation{∠CEF=∠CFE}]

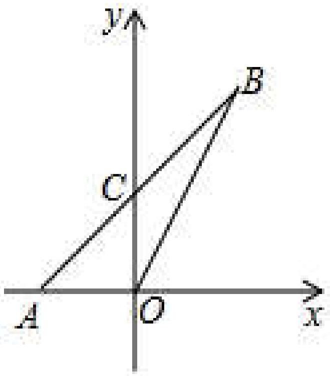
901, topic: as shown in the parallelogram ABCD, ∠B =∠AFE, EA is the angle bisector of ∠BEF Proof: #% # (1) △ABE≌ △AFE; #% # (2) ∠FAD =∠CDE. #% # <img>



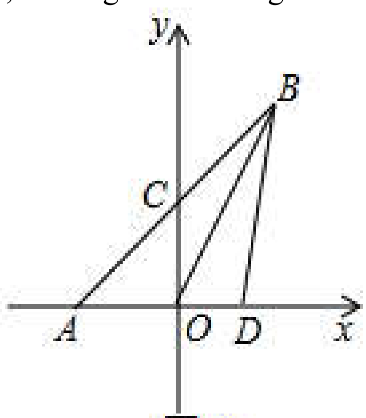
graph:
{"stem":{"pictures":[{"picturename":"1000034161_Q_1.jpg","coordinates":{"A":"-8.00,6.00","B":"-9.34,3.00","C":"-4.34,3.00","D":"-3.00,6.00","E":"-7.01,3.00","F":"-5.21,4.35"},"collineations":{"0":"B###E###C","1":"E###F###D","2":"A###E","3":"A###F","4":"A###B","5":"A###D","6":"C###D"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: ParallelogramRelation{parallelogram=Parallelogram:ABCD},EqualityRelation{∠ABE=∠AFE},AngleBisectorRelation{line=EA,angle=∠BEF, angle1=∠AEB, angle2=∠AEF},ProveConclusionRelation:[Proof: TriangleCongRelation{triangleA=△ABE, triangleB=△AFE}],ProveConclusionRelation:[Proof: EqualityRelation{∠DAF=∠CDF}]

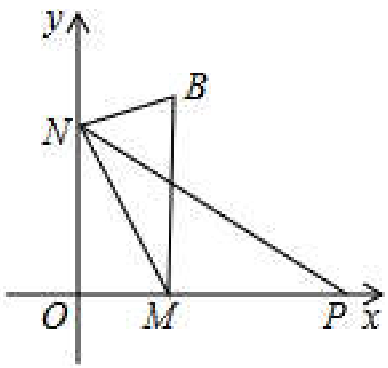
902, topic: as shown, the plane rectangular coordinate system, AB y axes cross at points C, coupling OB (1) shown in FIG ① #% #, known A (-2,0), B. (2,4), the area of the AOB find △ ;% # # (2) As shown in ② , point D on the x-axis, ∠OBD =∠OBC, seeking $ \ frac {\ angle BDA- \ angle BAD} {\ angle BOC} $ value; #% # (3) shown in FIG ③ , BM⊥x axis at points M, N in the y-axis, ∠MNB =∠MBN, the point P in the x-axis, ∠MNP =∠MPN, seeking ∠BNP degree. #% # <img>



图①



图②

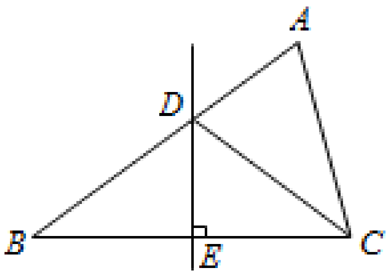


图③

graph:
{"stem":{"pictures":[],"appliedproblems":{}},"substems":[{"substemid":"1","questionrelies":"","pictures":[{"picturename":"1000060877_Q_1.jpg","coordinates":{"A":"-2.00,0.00","B":"2.00,4.00","C":"0.00,2.00","O":"0.00,0.00"},"collineations":{"0":"A###B###C","1":"A###O","2":"B###O"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},{"substemid":"2","questionrelies":"","pictures":[{"picturename":"1000060877_Q_1.jpg","coordinates":{"A":"-2.00,0.00","B":"2.00,4.00","C":"0.00,2.00","O":"0.00,0.00","D":"1.43,0.00"},"collineations":{"0":"A###B###C","1":"A###O###D","2":"B###O","3":"B###D"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},{"substemid":"3","questionrelies":"","pictures":[{"picturename":"1000060877_Q_1.jpg","coordinates":{"M":"1.00,0.00","N":"0.00,3.00","B":"1.00,3.16","P":"4.16,0.00","O":"0.00,0.00"},"collineations":{"0":"O###M###P","1":"O###N","2":"N###M","3":"B###M","4":"B###N","5":"N###P"},"variable-equals":{},"circles":[]}],"appliedproblems":{}}]}

NLP: LineCrossRelation [crossPoint=Optional.of(C), iLine1=AB, iLine2=StraightLine[Y] analytic :x=0 slope: b: isLinearFunction:false],SegmentRelation:OB,EqualityRelation{S_△ABO=v_0},PointRelation:A(-2,0),PointRelation:B(2,4),Calculation:(ExpressRelation:[key:]v_0),PointOnLineRelation{point=D, line=StraightLine[X] analytic :y=0   slope:0   b:0 isLinearFunction:false, isConstant=false, extension=false},EqualityRelation{∠OBD=∠CBO},Calculation:(ExpressRelation:[key:]((∠BDA-∠BAD)/(∠BOC))),LinePerpRelation{line1=BM, line2=StraightLine[X] analytic :y=0   slope:0   b:0 isLinearFunction:false, crossPoint=M},PointOnLineRelation{point=N, line=StraightLine[Y] analytic :x=0   slope: b: isLinearFunction:false, isConstant=false, extension=false},EqualityRelation{∠MNB=∠MBN},PointOnLineRelation{point=P, line=StraightLine[X] analytic :y=0   slope:0   b:0 isLinearFunction:false, isConstant=false, extension=false},EqualityRelation{∠MNP=∠MPN},Calculation:AngleRelation{angle=∠BNP},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]S_△ABO)},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]((∠BDA-∠BAD)/(∠BOC)))},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]∠BNP)}

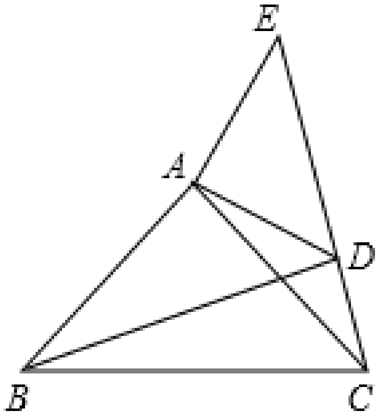
903, topic: As shown in the △ABC, AB =5cm, AC =3cm, BC cross each perpendicular bisector AB, BC at point D, E, △ACD seeking perimeter #% # <img. >



graph: {"stem":{"pictures":[{"picturename":"1000038277_Q_1.jpg","coordinates":{"A":"-5.00,6.00","B":"-9.00,3.00","C":"-4.00,3.00","D":"-6.50,4.88","E":"-6.50,3.00"},"collineations":{"0":"A###D###B","1":"B###E###C","2":"A###C","3":"D###C","4":"D###E"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: MiddlePerpendicularRelation [iLine1=DE, iLine2=BC, crossPoint=Optional.of(E)],EqualityRelation{C_△ACD=v_1},TriangleRelation:△ABC,EqualityRelation{AB=5},EqualityRelation{AC=3},Calculation:(ExpressRelation:[key:]v_1),LineCrossRelation [crossPoint=Optional.of(E), iLine1=BC, iLine2=ED],LineCrossRelation [crossPoint=Optional.of(D), iLine1=AB, iLine2=ED],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]C_△ACD)}

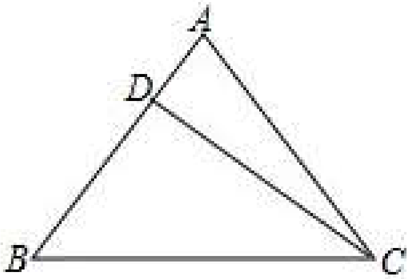
904, topic: Given: As shown in △ABC, △ADE in, ∠BAC =∠DAE =90 °, AB =AC, AD =AE, points C, D, E three points along the same line, is connected BD . #% # Proof: (1) △BAD≌ △CAE; #% # (2) test conjecture BD, any special positional relationship CE, and demonstrate #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000040011_Q_1.jpg","coordinates":{"A":"3.00,3.00","B":"0.00,0.00","C":"6.00,0.00","D":"5.34,1.88","E":"4.12,5.34"},"collineations":{"0":"E###D###C","1":"A###B","2":"E###A","3":"A###D","4":"A###C","5":"B###D","6":"B###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleRelation:△ABC,TriangleRelation:△ADE,MultiEqualityRelation [multiExpressCompare=∠BAC=∠DAE=(1/2*Pi), originExpressRelationList=[], keyWord=null, result=null],EqualityRelation{AB=AC},EqualityRelation{AD=AE},SegmentRelation:BD,ProveConclusionRelation:[Proof: TriangleCongRelation{triangleA=△BAD, triangleB=△CAE}],JudgePostionConclusionRelation: [data1=BD, data2=CE]

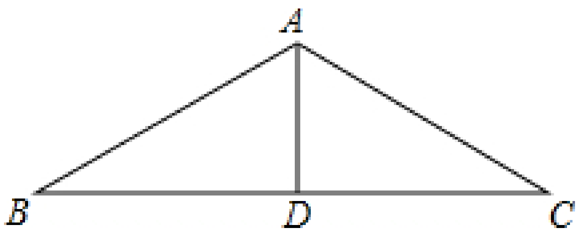
905, topic: As shown, the ABC △AB =AC, BC =20, D is the point AB, and CD =16, BD =12, the area of ABC is seeking △#% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000082210_Q_1.jpg","coordinates":{"A":"0.00,3.33","B":"-2.50,0.00","C":"2.50,0.00","D":"-0.69,2.41"},"collineations":{"0":"A###D###B","1":"A###C","2":"C###D","3":"C###B"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP:
EqualityRelation{S_△ABC=v_0},TriangleRelation:△ABC,EqualityRelation{AB=AC},EqualityRelation{BC=20},PointOnLineRelation{point=D, line=AB, isConstant=false, extension=false},EqualityRelation{CD=16},EqualityRelation{BD=12},Calculation:(ExpressRelation:[key:]v_0),SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]S_△ABC)}

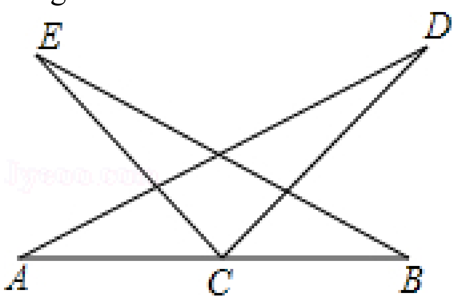
906, topic: as shown, in the △ABC, AB =AC, D is the midpoint of edge BC, ∠B =30 °, and seeking ∠BAD degree ∠ADC #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"3DC34A19E0944A4FA933255B51360E22.jpg","coordinates":{"A":"-10.00,5.31","B":"-14.00,3.00","C":"-6.00,3.00","D":"-10.00,3.00"},"collineations":{"0":"A###B","1":"D###A","2":"A###C","3":"C###D"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleRelation: △ABC, EqualityRelation {AB =AC}, MiddlePointOfSegmentRelation {middlePoint =D, segment =BC}, EqualityRelation {∠B =(1/6 * Pi)}, the size of the required angle: AngleRelation {angle =∠BAD }, find the size of the angle: AngleRelation {angle =∠ADC}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] ∠BAD)}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] ∠ADC)}

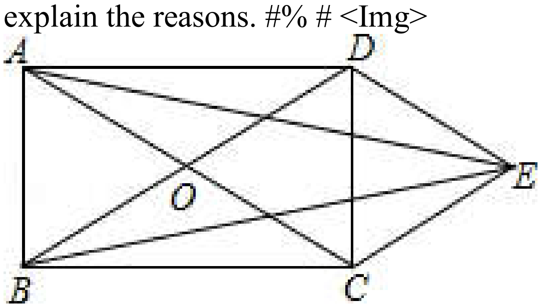
907, topic: FIG, C is the midpoint of AB, AD =BE, CD =CE, ∠A =40 ° is required degree ∠B #% # <img>..



graph:
{"stem":{"pictures":[{"picturename":"1000040358_Q_1.jpg","coordinates":{"A":"-9.00,2.00","B":"-5.00,2.00","C":"-7.00,2.00","D":"-4.75,5.57","E":"-9.25,5.57"},"collineations":{"0":"A###C###B","1":"A###D","2":"D###C","3":"E###C","4":"E###B"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: MiddlePointOfSegmentRelation {middlePoint =C, segment =AB}, EqualityRelation {AD =BE}, EqualityRelation {CD =CE}, EqualityRelation {∠CAD =(2/9 * Pi)}, the size of the required angle: AngleRelation {angle =∠CBE}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] ∠CBE)}

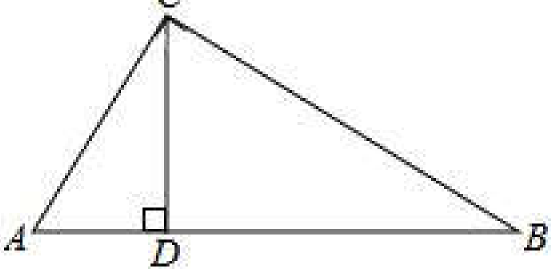
908, topic: FIG rectangular ABCD diagonal AC, BD intersect at point O, DE∥AC, CE∥BD #% # (1) Proof: OCED rhombic quadrilateral;% # # (2) is connected AE , BE, AE and BE is equal to it? Please explain the reasons. #% # <Img>



graph:
{"stem":{"pictures":[{"picturename":"1000041069_Q_1.jpg","coordinates":{"A":"-9.00,4.00","B":"-9.00,2.00","C":"-5.00,2.00","D":"-5.00,4.00","E":"-3.00,3.00","O":"-7.00,3.00"},"collineations":{"0":"A###D","1":"D###C","2":"C###B","3":"A###B","4":"A###O###C","5":"D###O###B","6":"D###E","7":"A###E","8":"B###E","9":"E###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: RectangleRelation{rectangle=Rectangle:ABCD},LineCrossRelation [crossPoint=Optional.of(O), iLine1=AC, iLine2=BD],LineParallelRelation [iLine1=DE, iLine2=AC],LineParallelRelation [iLine1=CE, iLine2=BD],SegmentRelation:AE,SegmentRelation:BE,ProveConclusionRelation:[Proof: RhombusRelation{rhombus=Rhombus:OCED}],ProveConclusionRelation:[Proof: EqualityRelation{AE=BE}]

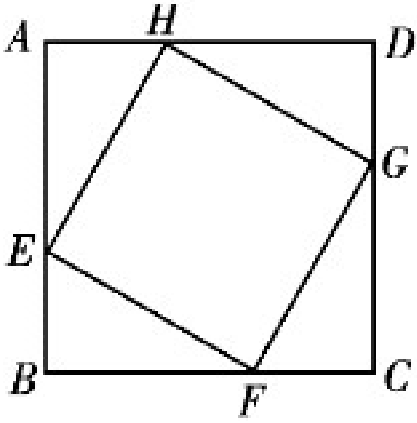
909, topic: FIG at $ \triangle ABC $ is known $ \angle ACB =90 ° $, $ AB =10cm $, $ BC =6cm $, $ CD \perp AB $ at point D. requirements:? #% # (1) AC long;? #% # (2) CD long.



graph:
{"stem":{"pictures":[{"picturename":"1000006703_Q_1.jpg","coordinates":{"A":"5.00,0.00","B":"-5.00,0.00","C":"-1.40,4.80","D":"-1.40,0.00"},"collineations":{"0":"B###C","1":"B###D###A","2":"D###C","3":"A###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleRelation: △ABC, EqualityRelation {∠ACB =(1/2 * Pi)}, EqualityRelation {AB =10}, EqualityRelation {BC =6}, LinePerpRelation {line1 =CD, line2 =AB, crossPoint =D}, EqualityRelation {AC =v_0}, evaluation (size) :(ExpressRelation: [key:] v_0), EqualityRelation {CD =v_1}, evaluation (size) :(ExpressRelation: [key:] v_1), SolutionConclusionRelation {relation =evaluation (size) :(ExpressRelation: [key:] AC)}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] CD)}

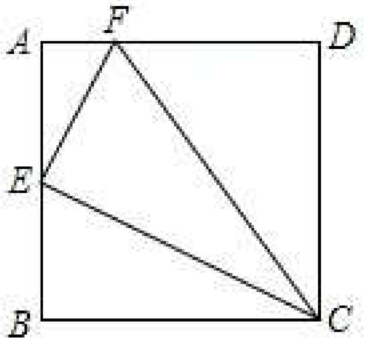
910, topic: as shown, the respective corners of a square side length of 2 removed ABCD, EFGH still obtained quadrilateral is a square, $ AE =\frac {3} {2} $ #% # (1).? demand side length of the square EFGH;? #% # (2) find a small square with a square similar to the original ratio.



graph:
{"stem":{"pictures":[{"picturename":"1000004667_Q_1.jpg","coordinates":{"A":"0.00,2.00","B":"0.00,0.00","C":"2.00,0.00","D":"2.00,2.00","E":"0.00,0.50","F":"1.50,0.00","G":"2.00,1.50","H":"0.50,2.00"},"collineations":{"0":"A###H###D","1":"A###E###B","2":"B###F###C","3":"D###G###C","4":"E###H","5":"E###F","6":"G###F","7":"G###H"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: EqualityRelation {AE =(3/2)}, SquareRelation {square =Square: EFGH}, evaluation (size) :(ExpressRelation: [key:] EF), evaluation (size) :(ExpressRelation: [key:] FG), evaluation (size) :(ExpressRelation: [key:] GH), evaluation (size) :(ExpressRelation: [key:] EH), SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] EF)}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] FG)}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] GH)}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] EH)}

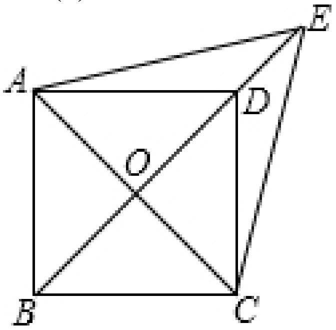
911, topic: Given: As shown in the square ABCD $ $, E is the midpoint of AB, F is the point on the AD, and $ {\ rm {AF}} =\ frac {1} {4} AD $ Description $ △FEC $ is a right triangle.



graph:
{"stem":{"pictures":[{"picturename":"1000008595_Q_1.jpg","coordinates":{"A":"0.00,4.00","B":"0.00,0.00","C":"4.00,0.00","D":"4.00,4.00","E":"0.00,2.00","F":"1.00,4.00"},"collineations":{"0":"C###D","1":"C###E","2":"C###F","3":"E###F","4":"A###F###D","5":"A###E###B","6":"B###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP:
SquareRelation{square=Square:ABCD},MiddlePointOfSegmentRelation{middlePoint=E,segment=AB},PointOnLineRelation{point=F, line=AD, isConstant=false, extension=false},EqualityRelation{(AF)=(1/4)*AD},ProveConclusionRelation:[Proof: RightTriangleRelation:RightTriangle:△FEC[Optional.of(E)]]

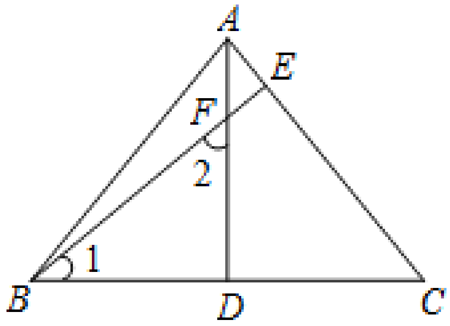
912, topic: FIG known parallelogram ABCD, the diagonal the AC, BD intersect at point O, E is a point on an extension line BD, and equilateral triangle △ACE #% # (1) Proof: a diamond quadrangle ABCD;% # # (2) if ∠AED =2∠EAD, Proof: square quadrangle ABCD #% # <img>.



graph: {"stem":{"pictures":[{"picturename":"1000041041_Q_1.jpg","coordinates":{"A":"0.00,3.00","B":"0.00,0.00","C":"3.00,0.00","D":"3.00,3.00","E":"4.10,4.10","O":"1.50,1.50"},"collineations":{"0":"A###B","1":"B###C","2":"C###D","3":"D###A","4":"A###O###C","5":"B###O###D###E","6":"E###A","7":"E###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: ParallelogramRelation{parallelogram=Parallelogram:ABCD},LineCrossRelation [crossPoint=Optional.of(O), iLine1=AC, iLine2=BD],PointOnLineRelation{point=E, line=BD, isConstant=false, extension=true},RegularTriangleRelation:RegularTriangle:△ACE,EqualityRelation{∠AED=2*∠DAE},ProveConclusionRelation:[Proof: RhombusRelation{rhombus=Rhombus:ABCD}],ProveConclusionRelation:[Proof: SquareRelation{square=Square:ABCD}]

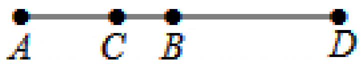
913, topic:. As shown, the ABC AD is △high, E is point AC, BE AD cross at point F, and BF =AC, FD =CD Proof: BE⊥AC #% # <img>



graph: {"stem":{"pictures":[{"picturename":"1000063712_Q_1.jpg","coordinates":{"A":"2.28,2.30","B":"-0.71,-0.69","C":"4.23,-0.69","D":"2.28,-0.69","E":"2.75,1.58","F":"2.28,1.27"},"collineations":{"0":"A###F###D","1":"A###E###C","2":"B###F###E","3":"B###D###C","4":"A###B"},"variable-equals":{"0":"∠1=∠CBE","1":"∠2=∠BFD"},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleRelation:△ABC,PointOnLineRelation{point=E, line=AC, isConstant=false, extension=false},LineCrossRelation [crossPoint=Optional.of(F), iLine1=BE, iLine2=AD],EqualityRelation{BF=AC},EqualityRelation{DF=CD},LinePerpRelation{line1=AD, line2=BD, crossPoint=D},ProveConclusionRelation:[Proof: LinePerpRelation{line1=BE, line2=AC, crossPoint=E}]

914, topic: FIG, known point C is a point on the line segment AB, point D is a point on an extension line AB and AD: BD =3: 2, AB: AC =5: 3, AC =3.6, seek AD long. #% # <img>

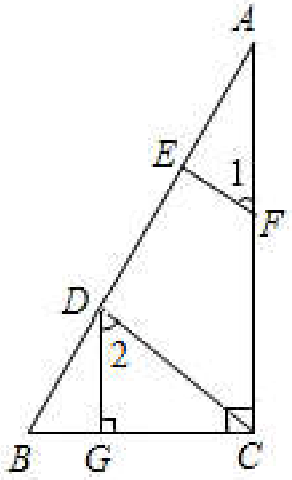


graph: {"stem":{"pictures":[{"picturename":"4CB1E795805543F588A238EC2D293CAC.jpg","coordinates":{"A":"-18.00,4.00","B":"-12.00,4.00","C":"-14.40,4.00","D":"0.00,4.00"},"collineations":{"0":"B###A###C###D"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: EqualityRelation{AD=v_0},PointOnLineRelation{point=C, line=AB, isConstant=false, extension=false},PointOnLineRelation{point=D, line=AB, isConstant=false, extension=true},EqualityRelation{(AD)/(BD)=(3)/(2)},EqualityRelation{(AB)/(AC)=(5)/(3)},EqualityRelation{AC=3.6},Calculation:(ExpressRelation:[key:]v_0),SolutionConclusionRelation{relation=Calculation:(E

xpressRelation:[key:]AD)}

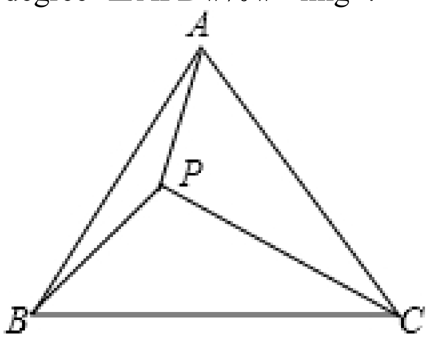
915, topic: FIG known DG⊥BC, AC⊥BC, EF⊥AB, ∠1 =∠2, Proof: . CD⊥AB #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000063477_Q_1.jpg","coordinates":{"A":"5.85,3.07","B":"3.57,-0.08","C":"5.85,-0.08","D":"4.35,1.00","E":"5.12,2.06","F":"5.85,1.53","G":"4.35,-0.08"},"collineations":{"0":"B###A###E###D","1":"B###G###C","2":"F###C###A","3":"E###F","4":"C###D","5":"D###G"},"variable-equals":{"0":"∠1=∠AFE","1":"∠2=∠CDG"},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: LinePerpRelation{line1=DG, line2=BC, crossPoint=G},LinePerpRelation{line1=AC, line2=BC, crossPoint=C},LinePerpRelation{line1=EF, line2=AB, crossPoint=E},EqualityRelation{∠AFE=∠CDG},ProveConclusionRelation:[Proof: LinePerpRelation{line1=CD, line2=AB, crossPoint=D}]

916, topic: As shown, the equilateral triangle ABC is known that P, AP =3, BP =4, CP =5, the required degree ∠APB #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000072298_Q_1.jpg","coordinates":{"A":"-5.02,9.84","B":"-9.01,4.39","C":"-2.29,3.65","P":"-6.00,7.00"},"collineations":{"0":"A###B","1":"B###C","2":"A###C","3":"A###P","4":"B###P","5":"P###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: RegularTriangleRelation:RegularTriangle:△ABC,PositionOfPoint2RegionRelation{point=P, region=EnclosedRegionRelation{name=ABC, closedShape=△ABC}, position=inner},EqualityRelation{AP=3},EqualityRelation{BP=4},EqualityRelation{CP=5},Calculation:AngleRelation{angle=∠APB},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]∠APB)}

917, topic: 1, in the △OAB, ∠OAB =90 °, ∠AOB =30 °, OB =8 OB to as an edge, the outer △OAB as equilateral △OBC, D is the midpoint of OB. , OC for extending and connected to AD E% # # (1) Proof: ABCE quadrilateral is a parallelogram;% # # (2) in FIG. 2, the quadrilateral ABCO in FIG 1 is folded so that point C coincides with point a , to fold FG, rectification of OG. #% # <img><img>

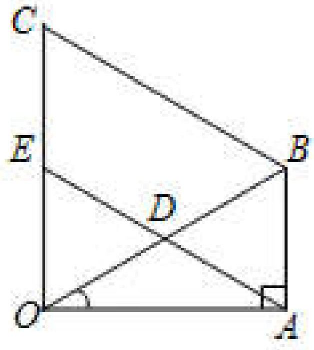
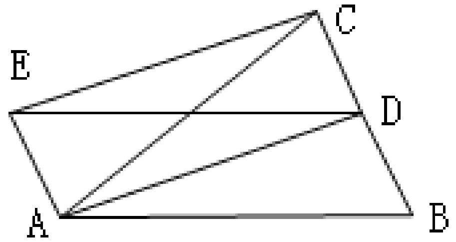


图1

graph:
{"stem":{"pictures":[],"appliedproblems":{}},"substems":[{"substemid":"1","questionrelies":"","pictures":[{"picturename":"1000040602_Q_1.jpg","coordinates":{"A":"3.78,0.00","B":"3.78,1.93","C":"0.44,3.86","D":"2.11,0.97","E":"0.44,1.93","O":"0.44,0.00"},"collineations":{"0":"C###E###O","1":"O###A","2":"A###B","3":"B###C","4":"B###D###O","5":"A###D###E"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},{"substemid":"2","questionrelies":"","pictures":[{"picturename":"1000040602_Q_1.jpg","coordinates":{"A":"0.00,-5.85","B":"0.00,-3.56","C":"-3.96,-1.28","O":"-3.96,-5.85","F":"-1.19,2.88","G":"-3.96,-5.28"},"collineations":{"0":"C###G###O","1":"O###A","2":"A###B","3":"B###F###C","4":"G###F","5":"O###B","6":"G###A","7":"A###F"},"variable-equals":{},"circles":[]}],"appliedproblems":{}}]}

NLP: TriangleRelation:△OAB,EqualityRelation{∠BAO=(1/2*Pi)},EqualityRelation{∠AOD=(1/6*Pi)},EqualityRelation{BO=8},TriangleRelation:△OAB,RegularTriangleRelation:RegularTriangle:△OBC,MiddlePointOfSegmentRelation{middlePoint=D,segment=OB},LineCrossRelation [crossPoint=Optional.of(E), iLine1=AD, iLine2=OC],EqualityRelation{GO=v_0},(ExpressRelation:[key:]2),SymmetricRelation{preData=C,afterData=A,symmetric=StraightLine[FG] analytic :y=k_FG*x+b_FG slope:null b:null isLinearFunction:false, pivot=},Calculation:(ExpressRelation:[key:]v_0),ProveConclusionRelation:[Proof: ParallelogramRelation{parallelogram=Parallelogram:ABCE}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]GO)}

918, topic: Given: As shown in the △ABC, AB =AC, D is the midpoint of BC, the quadrilateral is a parallelogram ABDE confirmation: ADCE rectangular quadrilateral #% # <img>.

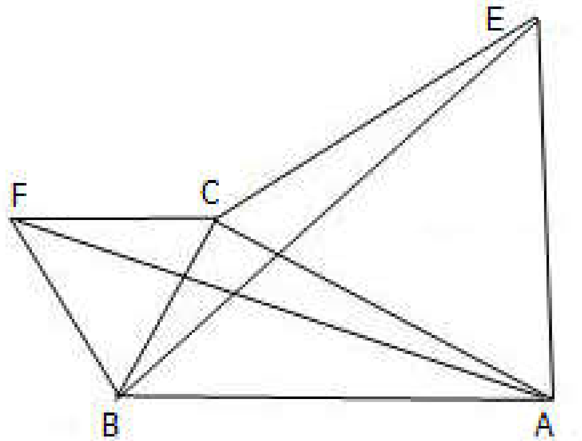


graph:
{"stem":{"pictures":[{"picturename":"1000050586_Q_1.jpg","coordinates":{"A":"-6.08,4.00","B":"-2.47,4.00","C":"-4.08,7.00","D":"-3.28,5.50","E":"-6.86,5.47"},"collineations":{"0":"C###D###B","1":"D###E","2":"A###B","3":"A###D","4":"E###C","5":"C###A","6":"A###E"},"variable-equals":{},"circles":[]}],"app

liedproblems":{}},"substems":[]}

NLP: TriangleRelation:△ABC,EqualityRelation{AB=AC},MiddlePointOfSegmentRelation{middlePoint=D,segment=BC},ParallelogramRelation{parallelogram=Parallelogram:ABDE},ProveConclusionRelation:[Proof: RectangleRelation{rectangle=Rectangle:ADCE}]

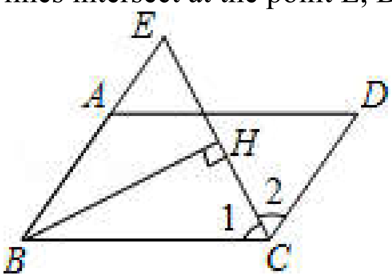
919, topic: as shown, respectively, at right angles Rt △ABC edges AC, BC as an edge, the outer Rt △ABC as two equilateral triangles △ACE and △BCF, coupling BE, AF Proof:. BE =AF # % # <img>



graph:
{"stem":{"pictures":[{"picturename":"D6383225E8C74FC3853C57FEFC80002D.jpg","coordinates":{"A":"-6.50,3.00","B":"-13.00,3.00","C":"-11.00,6.00","E":"-6.15,8.40","F":"-14.60,6.23"},"collineations":{"0":"B###A","1":"A###C","2":"A###E","3":"A###F","4":"B###C","5":"E###B","6":"F###B","7":"E###C","8":"C###F"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: RightTriangleRelation:RightTriangle:△ABC[Optional.of(C)],LineRoleRelation{Segment=AC, roleType=RIGHTLEG},LineRoleRelation{Segment=BC, roleType=RIGHTLEG},RightTriangleRelation:RightTriangle:△ABC[Optional.of(C)],RegularTriangleRelation:RegularTriangle:△ACE,RegularTriangleRelation:RegularTriangle:△BCF,SegmentRelation:BE,SegmentRelation:AF,ProveConclusionRelation:[Proof: EqualityRelation{BE=AF}]

920, topic: (2015 · Zigong) of the parallelogram ABCD, and the bisector BA ∠BCD the extension lines intersect at the point E, BH⊥EC at point H, Proof: CH =EH #% # <img>

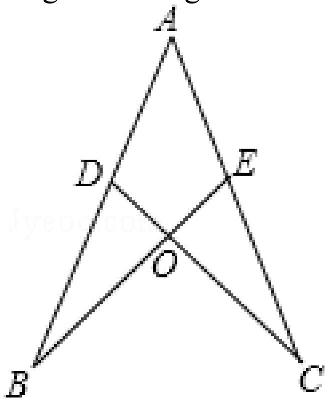


graph:
{"stem":{"pictures":[{"picturename":"1000031857_Q_1.jpg","coordinates":{"A":"-7.98,4.35","B":"-9.00,2.00","C":"-5.00,2.00","D":"-3.98,4.35","E":"-7.41,5.67","H":"-6.20,3.83"},"collineations":{"0":"E###A###B","1":"B###C","2":"C###D","3":"A###D","4":"B###H","5":"E###H###C"},"variable-equals":{"0":"∠1=∠ECB","1":"∠2=∠ECD"},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: AngleBisectorRelation{line=CH,angle=∠BCD, angle1=∠BCH, angle2=∠

DCH},ParallelogramRelation{parallelogram=Parallelogram:ABCD},LinePerpRelation{line1=BH, line2=EC, crossPoint=H},ProveConclusionRelation:[Proof: EqualityRelation{CH=EH}]

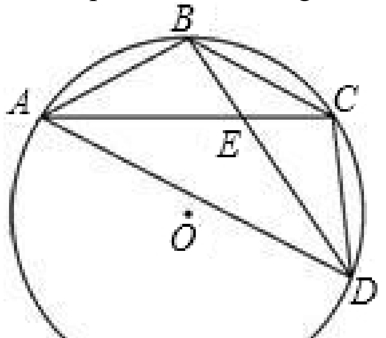
921, topic: FIG point on $ D $ $ $ AB, on a point $ E $ $ AC $, $ AB =AC $, $ AD =AE $ Proof: $ \ Angle B =\ angle C $.



graph:
{"stem":{"pictures":[{"picturename":"1000011145_Q_1.jpg","coordinates":{"A":"0.00,8.00","B":"-3.00,1.00","C":"3.00,1.00","D":"-1.18,5.24","E":"1.18,5.24","O":"0.00,4.04"},"collineations":{"0":"B###A###D","1":"B###E###O","2":"C###O###D","3":"C###A###E"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: PointOnLineRelation{point=D, line=AB, isConstant=false, extension=false},PointOnLineRelation{point=E, line=AC, isConstant=false, extension=false},EqualityRelation{AB=AC},EqualityRelation{AD=AE},ProveConclusionRelation:[Proof: EqualityRelation{∠DBO=∠ECO}]

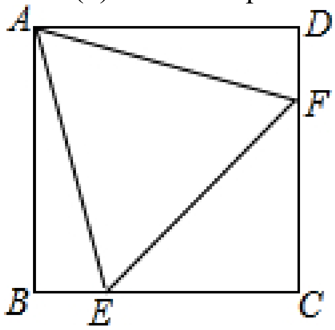
922, topic: FIG known A, B, C, D are four points on the $ \ odot O $, AB =BC, BD cross AC at point E, is connected CD, AD #% # (1). Proof: DB bisecting ∠ADC; #% # (2) when BE =3, ED =6, the length AB required #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000035146_Q_1.jpg","coordinates":{"A":"-5.20,0.40","B":"-2.60,4.50","C":"2.60,4.50","D":"5.20,0.40","O":"0.00,0.00","E":"0.00,3.00"},"collineations":{"0":"B###E###D","1":"C###A###E","2":"A###D","3":"A###B","4":"B###C","5":"C###D"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"A###B###C###D"}]}],"appliedproblems":{}},"substems":[]}

NLP: PointOnCircleRelation{circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, points=[A, B, C, D]},EqualityRelation{AB=BC},LineCrossRelation [crossPoint=Optional.of(E), iLine1=BD, iLine2=AC],SegmentRelation:CD,SegmentRelation:AD,EqualityRelation{AB=v_0},EqualityRelation{BE=3},EqualityRelation{DE=6},Calculation:(ExpressRelation:[key:]v_0),ProveConclusionRelation:[Proof: AngleBisectorRelation{line=DB,angle=∠ADC, angle1=∠ADB, angle2=∠BDC}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]AB)}

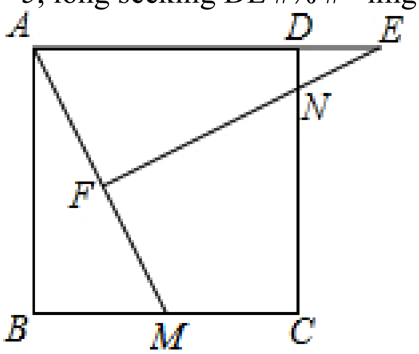
923, topic: As shown in the square ABCD, the other side length of 2 sides of the triangle vertices E AEF, F # #% respectively (1) in the confirmation BC and CD:. CE =CF; #% # (2) seeking the degree ∠AEB;. #% # (3) find the square area ABCD #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"51B99B47A7A54F528D15FBBA4FA623BA.jpg","coordinates":{"A":"-14.00,6.00","B":"-14.00,2.14","C":"-10.14,2.14","D":"-10.14,6.00","E":"-12.96,2.14","F":"-10.14,4.96"},"collineations":{"0":"B###A","1":"A###E","2":"A###F","3":"A###D","4":"B###E###C","5":"D###F###C","6":"F###E"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: SquareRelation {square =Square: ABCD}, PointOnLineRelation {point =F, line =CD, isConstant =false, extension =false}, the size of the required angle: AngleRelation {angle =∠AEB}, SquareRelation {square =Square: ABCD }, EqualityRelation {S_ABCD =v_0}, evaluation (size) :(ExpressRelation: [key:] v_0), ProveConclusionRelation: [Proof: EqualityRelation {CE =CF}], SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation : [key:] ∠AEB)}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] S_ABCD)}

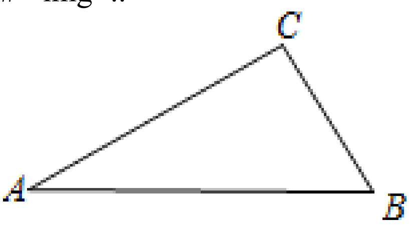
924, topic: FIG square ABCD, M is the BC bit, F is the midpoint of AM, EF⊥AM, AD extension lines cross at point E, at cross points DC N #% # (1) confirmation. : △ABM∽ △EFA; #% # (2) If AB =12, BM =5, long seeking DE #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000081342_Q_1.jpg","coordinates":{"A":"0.00,12.00","B":"0.00,0.00","C":"12.00,0.00","D":"12.00,12.00","E":"16.90,12.00","F":"2.50,6.00","M":"5.00,0.00","N":"12.00,9.96"},"collineations":{"0":"A###D###E","1":"A###F###M","2":"A###B","3":"C###N###D","4":"B###M###C","5":"E###N###F"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: SquareRelation{square=Square:ABCD},PointOnLineRelation{point=M, line=BC, isConstant=false, extension=false},MiddlePointOfSegmentRelation{middlePoint=F,segment=AM},LinePerpRelation{line1=EF, line2=AM, crossPoint=F},LineCrossRelation [crossPoint=Optional.of(E), iLine1=EF, iLine2=AD],LineCrossRelation [crossPoint=Optional.of(N), iLine1=EF, iLine2=DC],EqualityRelation{DE=v_0},EqualityRelation{AB=12},EqualityRelation{BM=5},Calculation:(ExpressRelation:[key:]v_0),ProveConclusionRelation:[Proof: TriangleSimilarRelation{triangleA=△ABM, triangleB=△EFA}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]DE)}

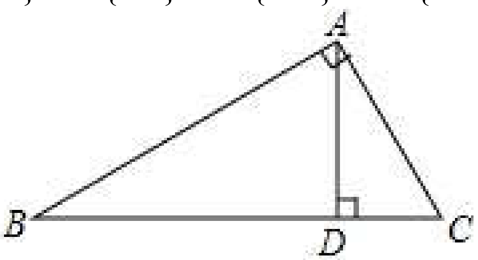
925, topic: FIG, ∠A ∠B with complementary angles, and ∠B =2∠A seeking ∠A, ∠B degree #% # <img>..



graph:
{"stem":{"pictures":[{"picturename":"1000051519_Q_1.jpg","coordinates":{"A":"-14.50,0.93","B":"-9.50,0.97","C":"-10.77,3.12"},"collineations":{"0":"A###B","1":"B###C","2":"A###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: AngleComplementRelation: ∠BAC / ∠ABC, EqualityRelation {∠ABC =2 * ∠BAC}, ANGULAR size: AngleRelation {angle =∠BAC}, the size of the required angle: AngleRelation {angle =∠ABC}, SolutionConclusionRelation {relation =evaluation (size) :(ExpressRelation: [key:] ∠BAC)}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] ∠ABC)}

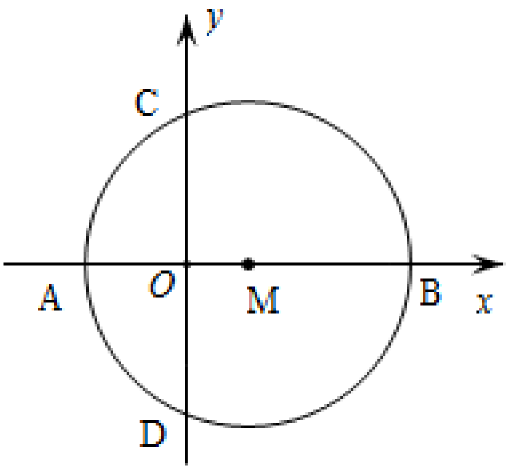
926, topic: FIG at $ △ABC $ is known $ ∠BAC =90 ° $, $ AD⊥BC $ again at point D. Description: $ {BC} ^ 2- {AC} ^ 2 ={ BD} ^ 2 + {AD} ^ 2 $.



graph:
{"stem":{"pictures":[{"picturename":"1000006713_Q_1.jpg","coordinates":{"A":"-1.80,2.40","B":"-5.03,0.00","C":"0.00,0.00","D":"-1.800,0.00"},"collineations":{"0":"B###C###D","1":"B###A","2":"A###C","3":"A###D"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleRelation:△ABC,EqualityRelation{∠BAC=(1/2*Pi)},LinePerpRelation{line1=AD, line2=BC, crossPoint=D},ProveConclusionRelation:[Proof: EqualityRelation{(BC)^2-(AC)^2=(BD)^2+(AD)^2}]

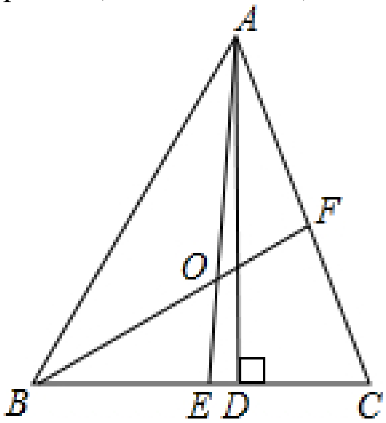
927, topic: FIG, 5 is the radius of the circle M, M is the center coordinates (1,0), and the axis of circular intersection coordinate #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000060695_Q_1.jpg","coordinates":{"A":"-4.00,0.00","B":"6.00,0.00","C":"0.00,4.90","D":"0.00,-4.90","O":"0.00,0.00","M":"1.00,0.00"},"collineations":{"0":"B###M###A###O","1":"C###O###D"},"variable-equals":{},"circles":[{"center":"M","pointincircle":"A###B###C###D"}]}],"appliedproblems":{}},"substems":[]}

NLP: CircleCenterRelation{point=M, conic=Circle[⊙M]{center=M, analytic=(x-x_M)^2+(y-y_M)^2=r_M^2}},RadiusRelation{radius=null, circle=Circle[⊙M]{center=M, analytic=(x-x_M)^2+(y-y_M)^2=r_M^2}, length=Express:[5]},PointRelation:M(1,0)

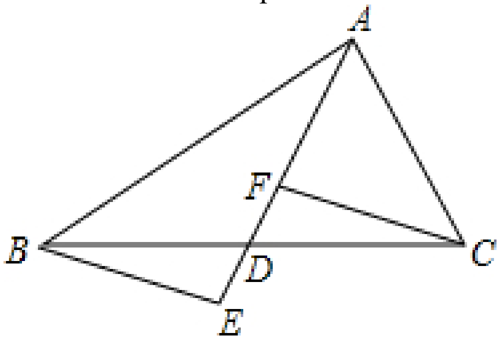
928, topic: As shown in the △ABC, the AD is high, AE, BF is the angle bisector, which intersect at the point O, ∠BAC =50 °, ∠C =70 °, seeking ∠DAC, ∠BOA degree . #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000081418_Q_1.jpg","coordinates":{"A":"2.45,4.25","B":"0.00,0.00","C":"4.00,0.00","D":"2.45,0.00","E":"2.08,0.00","F":"3.31,1.91","O":"2.19,1.27"},"collineations":{"0":"C###F###A","1":"B###O###F","2":"A###O###E","3":"A###D","4":"A###B","5":"B###E###D###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleRelation: △ABC, EqualityRelation {∠BAF =(5/18 * Pi)}, EqualityRelation {∠DCF =(7/18 * Pi)}, find the size of the angle: AngleRelation {angle =∠DAF}, ANGULAR size: AngleRelation {angle =∠AOB}, LinePerpRelation {line1 =AD, line2 =BD, crossPoint =D}, AngleBisectorRelation {line =AE, angle =∠BAF, angle1 =∠EAF, angle2 =∠BAE}, AngleBisectorRelation { line =BF, angle =∠ABE, angle1 =∠ABF, angle2 =∠EBF}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] ∠DAF)}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] ∠AOB)}

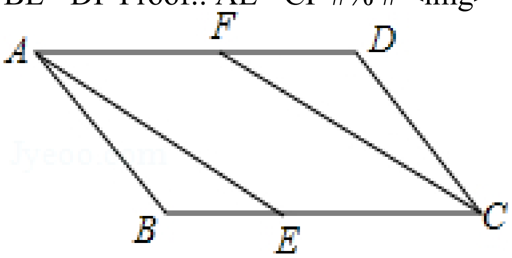
929, topic: As shown in △ABC, D is the midpoint of the side BC, F, E and AD, respectively, is a point of an extension line, CF∥BE #% # (1) Prove:. △BDE≌ △CDF. #% # (2) connect BF, CE, the test determines what is quadrilateral BECF particular quadrilateral, and the reasons. #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000084588_Q_1.jpg","coordinates":{"A":"-0.74,1.03","B":"-3.62,-1.48","C":"0.56,-1.43","D":"-1.53,-1.46","E":"-1.79,-2.25","F":"-1.28,-0.66"},"collineations":{"0":"B###D###C","1":"A###F###D###E","2":"B###A","3":"C###A","4":"B###E","5":"C###F","6":"B###F","7":"E###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleRelation:△ABC,MiddlePointOfSegmentRelation{middlePoint=D,segment=BC},PointOnLineRelation{point=F, line=AD, isConstant=false, extension=false},PointOnLineRelation{point=E, line=AD, isConstant=false, extension=false},LineParallelRelation [iLine1=CF, iLine2=BE],SegmentRelation:BF,SegmentRelation:CE,ProveConclusionRelation:[Proof: TriangleCongRelation{triangleA=△BDE, triangleB=△CDF}],ShapeJudgeConclusionRelation{geoEle=BECF}

930, topic: FIG, parallelogram ABCD, the points E, F, respectively, on the side of the AD and BC, and BE =DF Proof:. AE =CF #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000031842_Q_1.jpg","coordinates":{"A":"-10.00,4.00","B":"-8.00,2.00","C":"-4.00,2.00","D":"-6.00,4.00","E":"-6.59,2.00","F":"-7.41,4.00"},"collineations":{"0":"A###F###D","1":"A###B","2":"C###D","3":"B###E###C","4":"A###E","5":"C###F"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

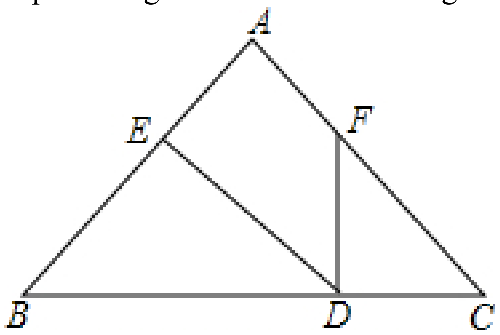
NLP: ParallelogramRelation{parallelogram=Parallelogram:ABCD},PointOnLineRelation{point=E, line=BC, isConstant=false, extension=false},PointOnLineRelation{point=F, line=AD, isConstant=false, extension=false},EqualityRelation{BE=DF},ProveConclusionRelation:[Proof: EqualityRelation{AE=CF}]

931, topic: FIG, C, D are points on the line segment AB, when CB =4cm, DB =7cm, and D is the midpoint of the AC, the AC seek length #% # <img>.

graph:
{"stem":{"pictures":[{"picturename":"1000081111_Q_1.jpg","coordinates":{"A":"-3.00,0.00","B":"7.00,0.00","C":"3.00,0.00","D":"0.00,0.00"},"collineations":{"0":"A###D###C###B"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: EqualityRelation{AC=v_0},PointOnLineRelation{point=C, line=AB, isConstant=false, extension=false},PointOnLineRelation{point=D, line=AB, isConstant=false, extension=false},EqualityRelation{BC=4},EqualityRelation{BD=7},MiddlePointOfSegmentRelation{middlePoint=D,segment=AC},Calculation:(ExpressRelation:[key:]v_0),SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]AC)}

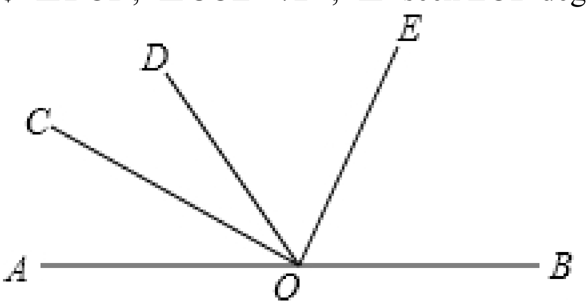
932, topic: FIG, △ABC medium, ∠B: ∠C =3: 4, FD⊥BC, DE⊥AB, and ∠AFD =146 °, the required degree ∠EDF #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000038042_Q_1.jpg","coordinates":{"A":"-1.47,0.12","B":"-5.19,-3.23","C":"0.81,-3.23","D":"-0.43,-3.23","E":"-2.56,-0.86","F":"-0.43,-1.41"},"collineations":{"0":"A###E###B","1":"A###F###C","2":"E###D","3":"B###C###D","4":"F###D"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleRelation: △ABC, EqualityRelation {(∠DBE) / (∠DCF) =(3) / (4)}, LinePerpRelation {line1 =FD, line2 =BC, crossPoint =D}, LinePerpRelation {line1 =DE, line2 =AB, crossPoint =E}, EqualityRelation {∠AFD =(73/90 * Pi)}, find the size of the angle: AngleRelation {angle =∠EDF}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key :] ∠EDF)}

933, topic: FIG, AB is a straight line, OC is ∠AOD bisector, OE in ∠BOD, ∠ $ DOE =\ frac {1} {3} $ ∠BOD, ∠COE =72 °, ∠ seek EOB degree. #% # <img>

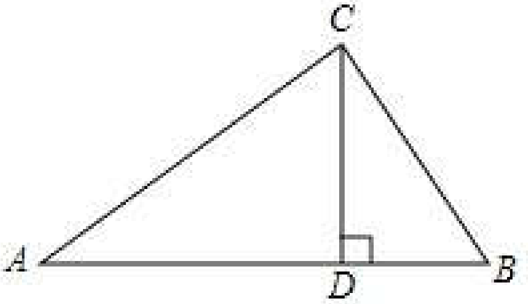


graph:

{"stem":{"pictures":[{"picturename":"1000072560_Q_1.jpg","coordinates":{"A":"0.00,0.00","B":"6.00,0.00","C":"0.57,1.76","D":"2.07,2.85","E":"3.93,2.85","O":"3.00,0.00"},"collineations":{"0":"A###O###B","1":"O###C","2":"O###D","3":"O###E"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: SegmentRelation: AB, AngleBisectorRelation {line =OC, angle =∠AOD, angle1 =∠AOC, angle2 =∠COD}, EqualityRelation {∠DOE =(1/3) * ∠BOD}, EqualityRelation {∠COE =(2 / 5 * Pi)}, the size of the required angle: AngleRelation {angle =∠BOE}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] ∠BOE)}

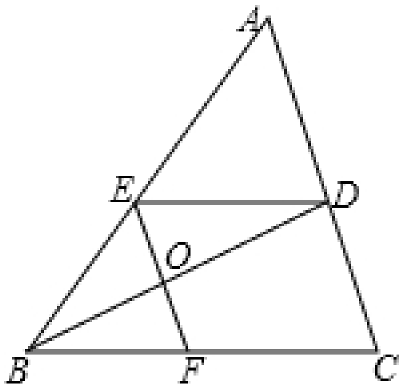
934, topic: As shown in the $ △ABC $, $ CD⊥AB $ at points D, if $ AD =2BD $, $ AC =3 $, $ BC =2 $, seeking $ {BD} ^ 2 $ long.



graph:
{"stem":{"pictures":[{"picturename":"1000006983_Q_1.jpg","coordinates":{"A":"0.00,10.00","B":"2.89,0.00","C":"2.31,1.91","D":"2.31,0.00"},"collineations":{"0":"B###C","1":"A###C","2":"B###A###D","3":"D###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleRelation: △ABC, LinePerpRelation {line1 =CD, line2 =AB, crossPoint =D}, EqualityRelation {AD =2 * BD}, EqualityRelation {AC =3}, EqualityRelation {BC =2}, evaluation (size) : (ExpressRelation: [key:] (BD) ^ 2), SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] (BD) ^ 2)}

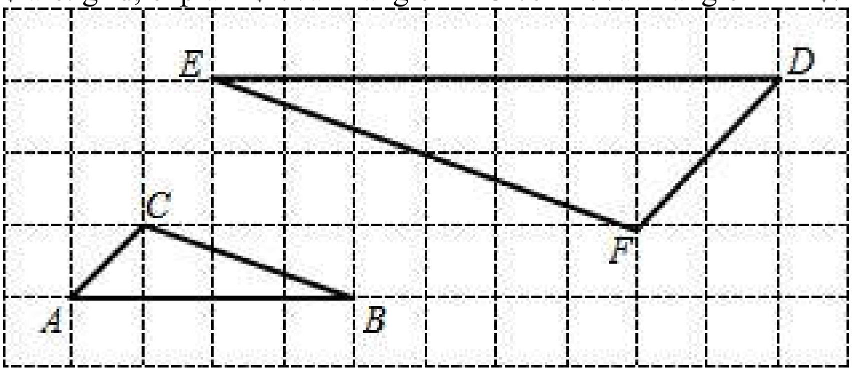
935, topic: Given: FIG, △ABC in, ∠B bisector AC BD cross at point D, DE∥BC, cross AB at point E, EF∥AC BC at point F, EF BD cross at point O. Proof: BE =CF #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000034194_Q_1.jpg","coordinates":{"A":"-4.58,6.01","B":"-7.00,2.00","C":"-3.00,2.00","D":"-3.73,3.85","E":"-5.88,3.85","F":"-5.16,2.00","O":"-5.49,2.85"},"collineations":{"0":"A###E###B","1":"B###F###C","2":"C###D###A","3":"E###D","4":"B###O###D","5":"E###O###F"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: AngleBisectorRelation{line=BD,angle=∠B, angle1=∠DBE, angle2=∠DBF},TriangleRelation:△ABC,LineCrossRelation [crossPoint=Optional.of(D), iLine1=BD, iLine2=AC],LineParallelRelation [iLine1=DE, iLine2=BC],LineCrossRelation [crossPoint=Optional.of(E), iLine1=DE, iLine2=AB],LineParallelRelation [iLine1=EF, iLine2=AC],LineCrossRelation [crossPoint=Optional.of(F), iLine1=EF, iLine2=BC],LineCrossRelation [crossPoint=Optional.of(O), iLine1=EF, iLine2=BD],ProveConclusionRelation:[Proof: EqualityRelation{BE=CF}]

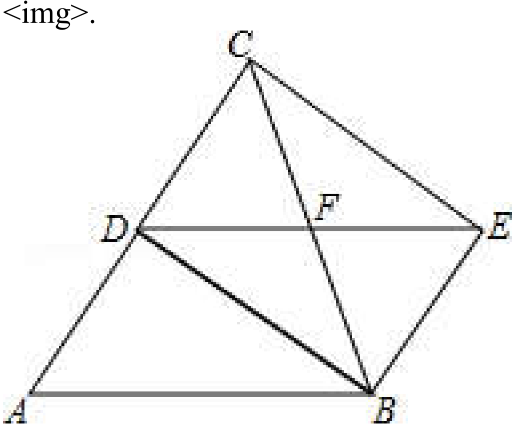
936, topic: As shown, each square grid graph is a square of 1 if $ A $, $ B $, $ C $, $ D $, $ E $, $ F $ are. grid, explain $ \ vartriangle ABC \ sim \ vartriangle DEF $. <img>



graph:
{"stem":{"pictures":[{"picturename":"1000005836_Q_1.jpg","coordinates":{"A":"-12.00,5.00","B":"-8.00,5.00","C":"-11.00,6.00","D":"-2.00,8.00","E":"-10.00,8.00","F":"-4.00,6.00"},"collineations":{"0":"B###A","1":"A###C","2":"B###C","3":"D###E","4":"D###F","5":"E###F"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: PointRelation:A,PointRelation:B,PointRelation:C,PointRelation:D,PointRelation:E,ProveConclusionRelation:[Proof: TriangleSimilarRelation{triangleA=△ABC, triangleB=△DEF}]

937, topic: As shown in the △ABC, AB =BC, BD equally ∠ABC, ABED quadrilateral is a parallelogram, DE BC at point F., CE connection confirmation: a rectangular quadrilateral BECD #% # <img>.

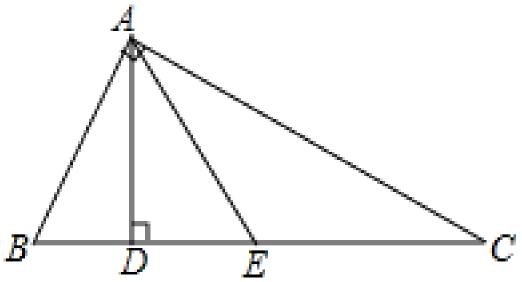


graph:
{"stem":{"pictures":[{"picturename":"1000036632_Q_1.jpg","coordinates":{"A":"-7.06,2.73","B":"-3.10,2.75","C":"-4.48,6.47","D":"-5.57,4.60","E":"-1.80,4.63","F":"-3.79,4.61"},"collineations":{"0":"A###B","1":"B###E","2":"E###C","3":"B###D","4":"C###D###A","5":"D###F###E","6":"B###F###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleRelation:△ABC,EqualityRelation{AB=BC},AngleBisectorRelation{line=BD,angle=∠

ABF, angle1=∠ABD, angle2=∠DBF},ParallelogramRelation{parallelogram=Parallelogram:ABED},LineCrossRelation[crossPoint=Optional.of(F), iLine1=DE, iLine2=BC],SegmentRelation:CE,ProveConclusionRelation:[Proof:RectangleRelation{rectangle=Rectangle:BECD}]

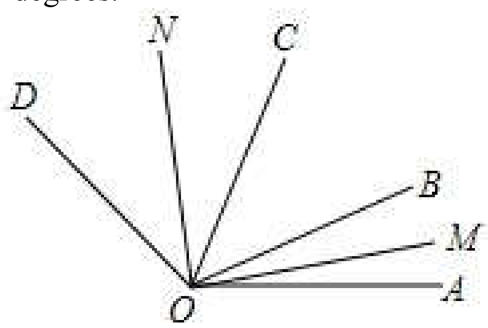
938, topic: FIG known AD, AE are high and middle △ABC, AB =6cm, AC =8cm, BC =10cm, ∠CAB =90 °, Determine: #% # (1) AD is length; #% # (2) △ABE area; the difference in circumferential length #% # (3) △ACE △ABE and the #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000038310_Q_1.jpg","coordinates":{"A":"-1.40,4.80","B":"-5.00,0.00","C":"5.00,0.00","D":"-1.40,0.00","E":"0.00,0.00"},"collineations":{"0":"A###B","1":"B###D###E###C","2":"A###C","3":"A###D","4":"A###E"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[{"substemid":"1","questionrelies":"","pictures":[],"appliedproblems":{}},{"substemid":"2","questionrelies":"","pictures":[],"appliedproblems":{}},{"substemid":"3","questionrelies":"","pictures":[],"appliedproblems":{}}]}

NLP:
TriangleRelation:△ABC,EqualityRelation{AB=6},EqualityRelation{AC=8},EqualityRelation{BC=10},EqualityRelation{∠BAC=(1/2*Pi)},LinePerpRelation{line1=AD, line2=BD, crossPoint=D},MidianLineOfTriangleRelation{midianLine=AE, triangle=△ABC, top=A, bottom=BC},EqualityRelation{AD=v_0},Calculation:(ExpressRelation:[key:]v_0),EqualityRelation{S_△ABE=v_1},Calculation:(ExpressRelation:[key:]v_1),EqualityRelation{C_△ACE=v_2},EqualityRelation{C_△ABE=v_3},EqualityRelation{v_2-(v_3)=v_4},Calculation:(ExpressRelation:[key:]v_4),SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]AD)},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]S_△ABE)},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]v_4)}

939, topic: FIG known $ \ angle AOB: \ angle BOC: \ angle COD =2: 3: 4 $, rays OM, ON respectively bisecting $ \ angle AOB $ and $ \ angle COD $ $ \ angle. MON =120 ^ \ circ $, seeking $ \ angle AOB $ degrees.

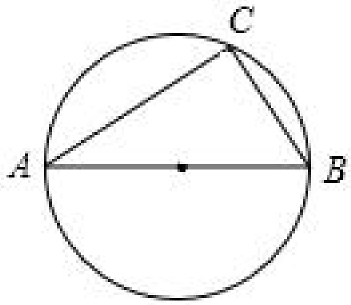


graph:
{"stem":{"pictures":[{"picturename":"1000006454_Q_1.jpg","coordinates":{"A":"-0.85,-0.53","B":"-2.30,3.

37","C":"-8.04,5.40","D":"-13.02,-0.64","M":"-0.72,1.74","O":"-6.93,-0.58","N":"-11.80,3.43"},"collineations":{"0":"A###O###D","1":"B###O","2":"C###O","3":"M###O","4":"N###O"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: ProportionsRelation{proportionList=[Proportion{proportionFactor=[Express:[∠AOB], Express:[∠BOC], Express:[∠COD]], value=null}, Proportion{proportionFactor=[Express:[2], Express:[3], Express:[4]], value=null}], keyWordList=[=]},AngleBisectorRelation{line=OM,angle=∠AOB, angle1=∠AOM, angle2=∠BOM},AngleBisectorRelation{line=ON,angle=∠COD, angle1=∠CON, angle2=∠DON},EqualityRelation{∠MON=(2/3*Pi)},Calculation:AngleRelation{angle=∠AOB},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]∠AOB)}

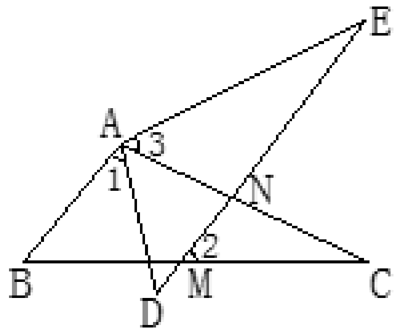
940, topic: FIG, if $ Rt △ABC $ three vertices A, B, C $ ⊙O $ on, Proof: the midpoint of the hypotenuse $ Rt △ABC $ $ ⊙O $ AB is the center of the circle.



graph:
{"stem":{"pictures":[{"picturename":"1000035800_Q_1.jpg","coordinates":{"A":"-12.00,4.05","B":"-3.97,4.00","C":"-6.61,7.80","O":"-7.99,4.02"},"collineations":{"0":"A###C","1":"B###C","2":"A###O###B"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"A###B###C"}]}],"appliedproblems":{}},"substems":[]}

NLP:
MiddlePointOfSegmentRelation{middlePoint=Q_0,segment=AB},RightTriangleRelation:RightTriangle:△ABC[Optional.of(C)],CircleCenterRelation{point=Q_1, conic=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}},PointOnCircleRelation{circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, points=[B, C]},ProveConclusionRelation:[PointCoincidenceRelation{point1=Q_0, point2=Q_1}]

941, topic: FIG, DE respectively cross BC, AC to M, N two, ∠1 =∠3 =40 °, AD =AB, AC =AE, ∠B =60 °, ∠C =20 ° #. % # (1) required degree ∠2;. #% # (2) find the degree ∠ENC #% # <img>

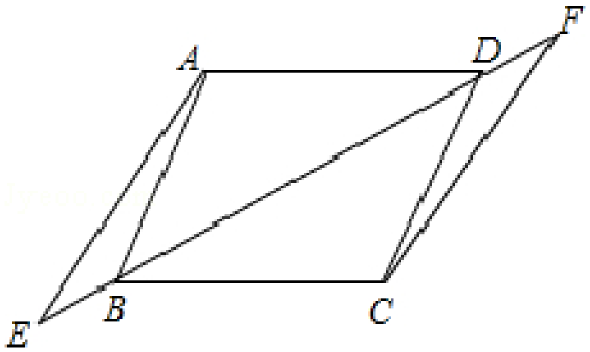


graph:
{"stem":{"pictures":[{"picturename":"1000042045_Q_1.jpg","coordinates":{"A":"-10.13,5.50","B":"-11.00,

4.00","C":"-6.00,4.00","D":"-9.83,3.79","E":"-6.00,7.01","M":"-9.58,4.00","N":"-8.50,4.91"},"collineations":{"0":"B###M###C","1":"A###B","2":"A###N###C","3":"A###E","4":"A###D","5":"D###M###N###E"},"variable-equals":{"0":"∠1=∠BAD","1":"∠2=∠NMC","2":"∠3=∠EAN"},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: LineCrossRelation [crossPoint =Optional.of (M), iLine1 =DE, iLine2 =BC], LineCrossRelation [crossPoint =Optional.of (N), iLine1 =DE, iLine2 =AC], MultiEqualityRelation [multiExpressCompare =∠BAD =∠ EAN =(2/9 * Pi), originExpressRelationList =[], keyWord =null, result =null], EqualityRelation {AD =AB}, EqualityRelation {AC =AE}, EqualityRelation {∠ABM =(1/3 * Pi) }, EqualityRelation {∠MCN =(1/9 * Pi)}, the size of the required angle: (ExpressRelation: [key:] ∠CMN), find the size of the angle: AngleRelation {angle =∠CNE}, SolutionConclusionRelation {relation =seek value (size) :(ExpressRelation: [key:] ∠CMN)}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] ∠CNE)}

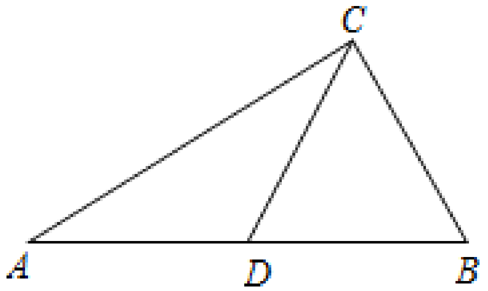
942, topic: FIG known quadrangle ABCD is a parallelogram, point E, B, D, F in the same straight line, and BE =DF #% # Proof:. AE =CF #% # <img>



graph: {"stem":{"pictures":[{"picturename":"1000084521_Q_1.jpg","coordinates":{"A":"-0.53,3.36","B":"-1.64,0.90","C":"1.03,0.85","D":"2.14,3.31","E":"-2.41,0.41","F":"2.92,3.80"},"collineations":{"0":"A###B","1":"C###B","2":"D###C","3":"D###A","4":"A###E","5":"C###F","6":"E###B###D###F"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: ParallelogramRelation{parallelogram=Parallelogram:ABCD},PointRelation:E,PointRelation:B,PointRelation:D,EqualityRelation{BE=DF},ProveConclusionRelation:[Proof: EqualityRelation{AE=CF}]

943, topic: As shown in the △ABC, CD midline on the side AB, and $ CD =\ frac {1} {2} AB $, Proof: right triangle △ABC #% # <img>.

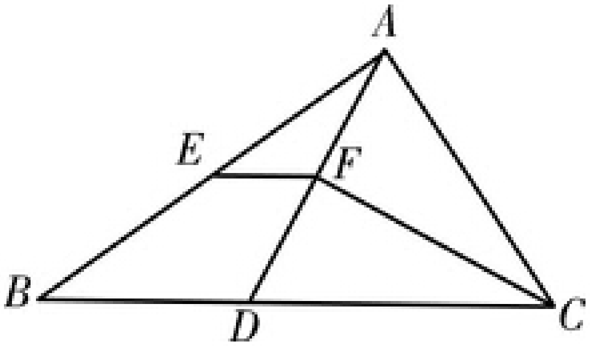


graph: {"stem":{"pictures":[{"picturename":"1000063666_Q_1.jpg","coordinates":{"A":"-3.48,-1.97","B":"1.14,-2.01","C":"0.00,0.00","D":"-1.17,-1.99"},"collineations":{"0":"A###D###B","1":"D###C","2":"C###A","3":"

C###B"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleRelation:△ABC,LineDecileSegmentRelation [iLine1=CD, iLine2=AB, crossPoint=Optional.of(D)],EqualityRelation{CD=(1/2)*AB},ProveConclusionRelation:[Proof: RightTriangleRelation:RightTriangle:△ABC[Optional.of(C)]]

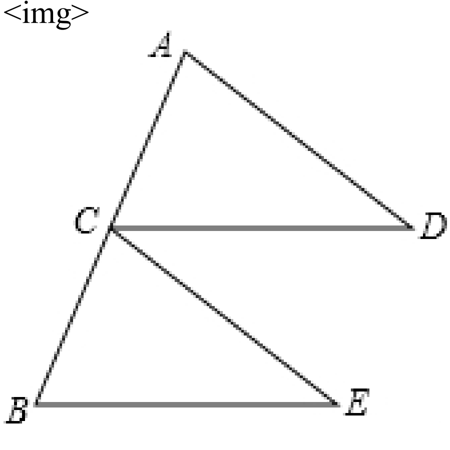
944, topic: FIG known $: △ABC $ in $, $ CF2 equally $ ∠ACB, CA =CD, EF // BD $ confirmation $:.. AE =EB $



graph:
{"stem":{"pictures":[{"picturename":"1000023379_Q_1.jpg","coordinates":{"A":"5.00,6.00","B":"-3.00,0.00","C":"8.01,0.00","D":"1.29,0.00","E":"1.00,3.00","F":"3.15,3.00"},"collineations":{"0":"A###E###B","1":"A###D###F","2":"F###E","3":"F###C","4":"A###C","5":"C###D###B"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleRelation:△ABC,AngleBisectorRelation{line=CF,angle=∠ACD, angle1=∠ACF, angle2=∠DCF},EqualityRelation{AC=CD},LineParallelRelation [iLine1=EF, iLine2=BD],ProveConclusionRelation:[Proof: EqualityRelation{AE=BE}]

945, topic: As shown, point C is the midpoint of AB, CD =BE, CD // BE Proof:. △ACD≌ △CBE #% # <img>

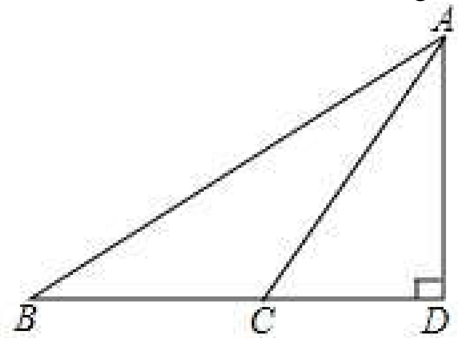


graph:
{"stem":{"pictures":[{"picturename":"1000035890_Q_1.jpg","coordinates":{"A":"-8.00,4.00","B":"-10.00,0.00","C":"-9.00,2.00","D":"-6.00,2.00","E":"-7.00,0.00"},"collineations":{"0":"B###C###A","1":"B###E","2":"C###E","3":"C###D","4":"A###D"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: MiddlePointOfSegmentRelation{middlePoint=C,segment=AB},EqualityRelation{CD=BE},LineParallelRelation [iLine1=CD, iLine2=BE],ProveConclusionRelation:[Proof:

TriangleCongRelation{triangleA=△ACD, triangleB=△CBE}]

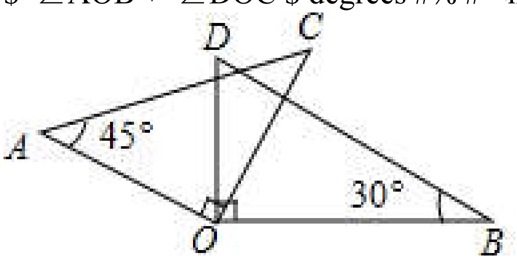
946, topic: As shown in the $ △ABD $, $ ∠D =90 ° $, C is the point on the BD, known $ BC =9 $, $ AB =17 $, $ AC =10 $, seeking AD long.



graph:
{"stem":{"pictures":[{"picturename":"1000006706_Q_1.jpg","coordinates":{"A":"6.00,8.00","B":"-9.00,0.00","C":"0.00,0.00","D":"6.00,0.00"},"collineations":{"0":"B###C###D","1":"B###A","2":"A###C","3":"A###D"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: EqualityRelation{AD=v_0},TriangleRelation:△ABD,EqualityRelation{∠ADC=(1/2*Pi)},PointOnLineRelation{point=C, line=BD, isConstant=false, extension=false},EqualityRelation{BC=9},EqualityRelation{AB=17},EqualityRelation{AC=10},Calculation:(ExpressRelation:[key:]v_0),SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]AD)}

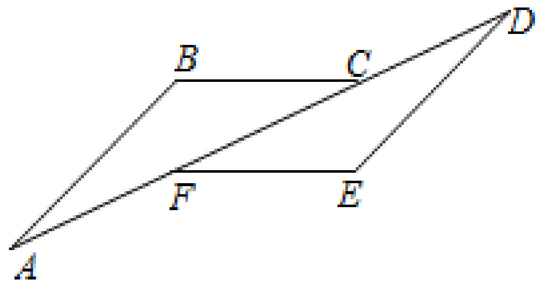
947, topic: a set square placed in the manner shown in FIG. (Right-angled vertex coincidence), seeking $ ∠AOB + ∠DOC $ degrees #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000027995.jpg","coordinates":{"A":"-6.00,3.00","B":"8.66,0.00","C":"3.00,6.00","D":"0.00,5.00","O":"0.00,0.00"},"collineations":{"0":"O###A","1":"O###D","2":"C###A###D","3":"D###B","4":"O###B","5":"O###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP:

948, topic: FIG, △ABC≌ △DEF, points A, F, C, D in the same line, ∠ABC =135 °, ∠A =20 ° and ∠E seeking the degree ∠DFE% # #. <img>



graph:

{"stem":{"pictures":[{"picturename":"1000063485_Q_1.jpg","coordinates":{"A":"-1.24,-1.40","B":"0.29,1.51","C":"2.83,2.29","D":"4.45,3.76","E":"3.19,0.71","F":"0.58,0.25"},"collineations":{"0":"F###A###C###D","1":"D###E","2":"F###E","3":"A###B","4":"B###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

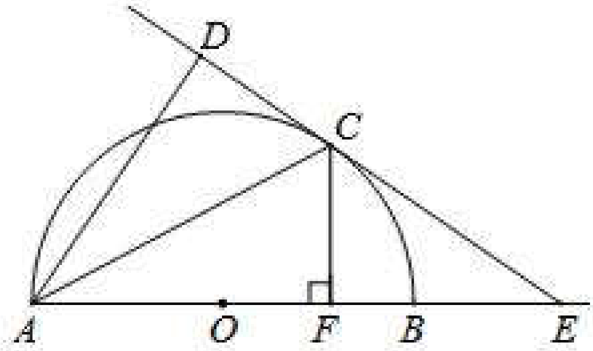
NLP: TriangleCongRelation {triangleA =△ABC, triangleB =△DEF}, PointRelation: A, PointRelation: F, PointRelation: C, EqualityRelation {∠ABC =(3/4 * Pi)}, EqualityRelation {∠BAF =(1/9 * Pi)}, the size of the required angle: AngleRelation {angle =∠CFE}, aNGULAR size: AngleRelation {angle =∠DEF}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] ∠CFE)}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] ∠DEF)}

949, topic: a square with a square in the plane ABCD in FIG CEFH place, even DE, BH, two lines intersect at M. Proof: #% # (1) BH =DE; #% # (2) BH⊥DE #. % # <img>

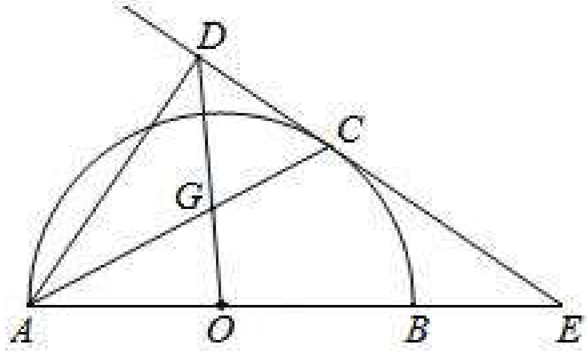
graph:

NLP: SquareRelation{square=Square:ABCD},SquareRelation{square=Square:CEFH},LineCrossRelation [crossPoint=Optional.of(M), iLine1=DE, iLine2=BH],ProveConclusionRelation:[Proof: EqualityRelation{BH=DE}],ProveConclusionRelation:[Proof: LinePerpRelation{line1=BH, line2=DE, crossPoint=}]

950, topic: FIG ① , AB is the diameter of the semicircle, O is the center, C is a straight line that, AD perpendicular through the point C on the arc, AC bisecting ∠DAB, AB extension lines cross the line CD at point E. % # # (1) Proof: DE is $ \ odot O $ tangent;% # # (2) If AB =8, B is the midpoint of the OE, CF⊥AB, pedal point F, CF long seek ; #% # (3) in FIG ② , is connected to the AC OD cross point G, if $ \ frac {CG} {GA} =\ frac {3} {4} $, seeking sin∠E value #% #. <img>



图①

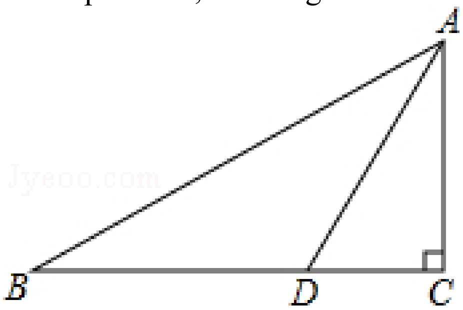


图②

graph:
{"stem":{"pictures":[{"picturename":"1000060682_Q_1.jpg","coordinates":{"A":"0.00,0.00","B":"8.00,0.00","C":"6.00,3.46","D":"3.00,5.20","O":"4.00,0.00","E":"12.00,0.00","F":"6.00,0.00","G":"3.60,2.08"},"collineations":{"0":"A###O###F###B###E","1":"D###C###E","2":"A###G###C","3":"D###G###O","4":"A###D","5":"A###C","6":"C###F","7":"D###O"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"A###B###C"}]}],"appliedproblems":{}},"substems":[]}

NLP: DiameterRelation{diameter=AB, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, length=null},CircleCenterRelation{point=O, conic=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}},PointOnCircleRelation{circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, points=[C]},LinePerpRelation{line1=CD, line2=AD, crossPoint=D},AngleBisectorRelation{line=AC,angle=∠DAO, angle1=∠CAD, angle2=∠CAO},LineCrossRelation [crossPoint=Optional.of(E), iLine1=AB, iLine2=CD],EqualityRelation{CF=v_1},EqualityRelation{AB=8},MiddlePointOfSegmentRelation{middlePoint=B,segment=OE},LinePerpRelation{line1=CF, line2=AB, crossPoint=F},Calculation:(ExpressRelation:[key:]v_1),LineCrossRelation [crossPoint=Optional.of(G), iLine1=OD, iLine2=AC],EqualityRelation{((CG)/(AG))=(3/4)},Calculation:(ExpressRelation:[key:]sin(∠BEC)),ProveConclusionRelation:[Proof: LineContactCircleRelation{line=DE, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, contactPoint=Optional.of(C), outpoint=Optional.absent()}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]CF)},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]sin(∠BEC))}

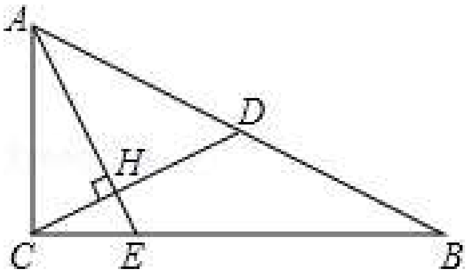
951, topic: As shown in the △ABC, ∠C =90 °, ∠B =30 °, $ AB =4 \ sqrt {3} $, AD equally ∠BAC, BC at points D, AD long seek . #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000031174_Q_1.jpg","coordinates":{"A":"-5.97,4.51","B":"-11.96,1.06","C":"-5.97,1.05","D":"-7.97,1.06"},"collineations":{"0":"B###D###C","1":"A###B","2":"A###C","3":"A###D"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: EqualityRelation{AD=v_0},TriangleRelation:△ABC,EqualityRelation{∠ACD=(1/2*Pi)},EqualityRelation{∠ABD=(1/6*Pi)},EqualityRelation{AB=4*(3^(1/2))},AngleBisectorRelation{line=AD,angle=∠BAC, angle1=∠BAD, angle2=∠CAD},LineCrossRelation [crossPoint=Optional.of(D), iLine1=AD, iLine2=BC],Calculation:(ExpressRelation:[key:]v_0),SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]AD)}

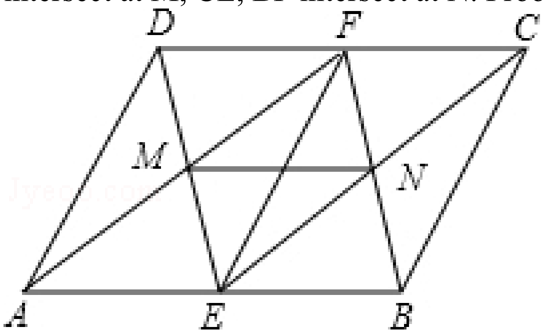
952, topic: FIG known $ Rt \ vartriangle ABC $ in, $ \ angle ACB =90 ^ \ circ $, $ CD $ is the oblique line AB $ $, through the point A as $ AE \ bot CD $, $ AE $ respectively $ CD $, $ CB $ at point H, E, $ AH =2CH $ (1) find $ \ value sin B $ a;. #% # (2) if $ CD =\ sqrt {5} $, $ evaluation of the BE $.



graph:
{"stem":{"pictures":[{"picturename":"1000010395_Q_1.jpg","coordinates":{"A":"0.00,2.00","B":"4.00,0.00","C":"0.00,0.00","D":"2.00,1.00","E":"1.00,0.00","H":"0.80,0.40"},"collineations":{"0":"B###E###C","1":"H###E###A","2":"D###H###C","3":"C###A"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[{"substemid":"1","pictures":[],"appliedproblems":{}},{"substemid":"2","questionrelies":"1","pictures":[],"appliedproblems":{}}]}

NLP: RightTriangleRelation:RightTriangle:△ABC[Optional.of(C)],EqualityRelation{∠ACE=(1/2*Pi)},LineDecileSegmentRelation [iLine1=CD, iLine2=AB, crossPoint=Optional.absent()],LinePerpRelation{line1=AE, line2=CD, crossPoint=H},LineCrossRelation [crossPoint=Optional.of(H), iLine1=AE, iLine2=CD],LineCrossRelation [crossPoint=Optional.of(E), iLine1=AE, iLine2=CB],EqualityRelation{AH=2*CH},Calculation:(ExpressRelation:[key:]sin(∠B)),EqualityRelation{CD=(5^(1/2))},Calculation:(ExpressRelation:[key:]BE),SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]sin(∠B))},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]BE)}

953, topic: FIG., It is known in □ABCD, EF∥BC, respectively, cross-AB, CD in E, F two, DE, AF intersect at M, CE, BF intersect at N. Proof: $ MN =\ frac {1} {2} AB $. #% # <img>

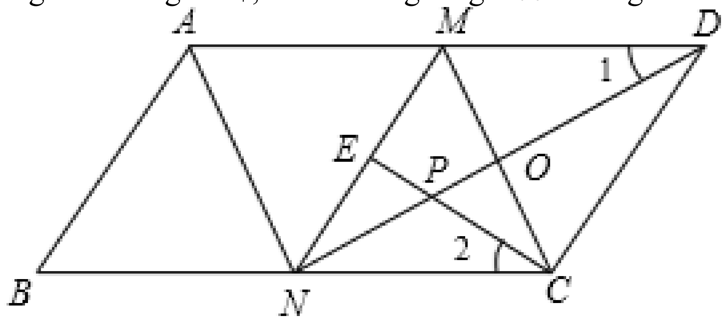


graph:
{"stem":{"pictures":[{"picturename":"1000034240_Q_1.jpg","coordinates":{"A":"-13.00,4.00","B":"-9.00,4.00","C":"-8.00,7.00","D":"-12.00,7.00","E":"-11.00,4.00","F":"-10.00,7.00","M":"-11.50,5.50","N":"-9.50,5.50"},"collineations":{"0":"A###D","1":"A###E###B","2":"B###C","3":"D###F###C","4":"D###E###M","5":"E###N###C","6":"A###M###F","7":"F###N###B","8":"M###N","9":"E###F"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: ParallelogramRelation{parallelogram=Parallelogram:ABCD},LineParallelRelation [iLine1=EF, iLine2=BC],LineCrossRelation [crossPoint=Optional.of(E), iLine1=EF, iLine2=AB],LineCrossRelation [crossPoint=Optional.of(F), iLine1=EF, iLine2=CD],LineCrossRelation [crossPoint=Optional.of(M), iLine1=DE, iLine2=AF],LineCrossRelation [crossPoint=Optional.of(N), iLine1=CE, iLine2=BF],ProveConclusionRelation:[Proof: EqualityRelation{MN=(1/2)*AB}]

954, topic: As shown in the □ABCD, M, N are the AD, BC is the midpoint, $ \ angle AND ={{90} ^ {\ circ}} $, $ MN =\ frac {1} { . 2} AD $, CM is connected to cross point DN O #% # (1) Proof: △ABN≌

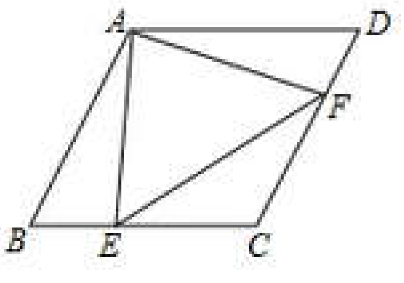
△CDM; #% # (2) through the point C as $ CE \ bot MN $ at point E, in cross-DN point P, if $ PE =1 $, $ \ angle 1 =\ angle 2 $, AN seeking long. #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000040877_Q_1.jpg","coordinates":{"A":"-4.13,3.57","B":"-5.61,1.03","C":"0.29,1.02","D":"1.77,3.62","E":"-1.91,2.29","M":"-1.16,3.57","N":"-2.65,1.03","O":"-0.46,2.30","P":"-1.18,1.87"},"collineations":{"0":"A###B","1":"B###N###C","2":"C###D","3":"D###M###A","4":"A###N","5":"N###E###M","6":"N###P###O###D","7":"E###P###C","8":"C###O###M"},"variable-equals":{"0":"∠1=∠ADN","1":"∠2=∠NCE"},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: ParallelogramRelation{parallelogram=Parallelogram:ABCD},MiddlePointOfSegmentRelation{middlePoint=M,segment=AD},MiddlePointOfSegmentRelation{middlePoint=N,segment=BC},EqualityRelation{∠ANP=((1/2*Pi))},EqualityRelation{MN=(1/2)*AD},LineCrossRelation [crossPoint=Optional.of(O), iLine1=CM, iLine2=DN],EqualityRelation{AN=v_0},LinePerpRelation{line1=CE, line2=MN, crossPoint=E},LineCrossRelation [crossPoint=Optional.of(P), iLine1=CE, iLine2=DN],EqualityRelation{EP=1},EqualityRelation{∠MDO=∠NCP},Calculation:(ExpressRelation:[key:]v_0),ProveConclusionRelation:[Proof: TriangleCongRelation{triangleA=△ABN, triangleB=△CDM}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]AN)}

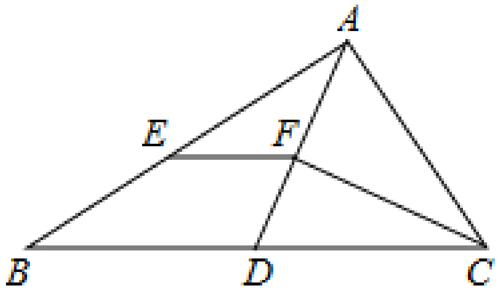
955, topic: FIG, in known diamond ABCD, E, F are CB, point on the CD, and BE =DF Proof:. ∠AEF =∠AFE #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000041806_Q_1.jpg","coordinates":{"A":"0.49,-0.14","B":"0.11,-0.87","C":"0.96,-0.87","D":"1.35,-0.14","E":"0.44,-0.87","F":"1.22,-0.38"},"collineations":{"0":"E###F","1":"D###F###C","2":"A###D","3":"B###E###C","4":"A###B","5":"A###E","6":"A###F"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: RhombusRelation{rhombus=Rhombus:ABCD},PointOnLineRelation{point=E, line=CB, isConstant=false, extension=false},PointOnLineRelation{point=F, line=CD, isConstant=false, extension=false},EqualityRelation{BE=DF},ProveConclusionRelation:[Proof: EqualityRelation{∠AEF=∠AFE}]

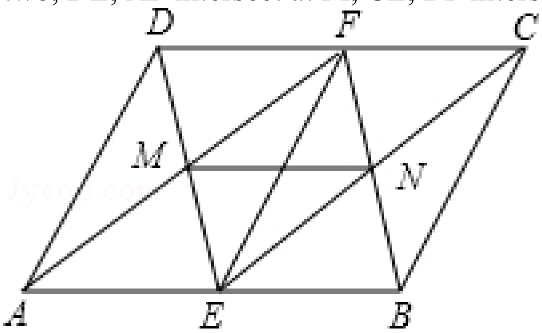
956, topic: As shown in the △ABC, \$ BC＞AC \$, point D on the BC, and DC =AC, ∠ACB bisector AD CF cross at point F. Point E is the midpoint of AB, connector . EF #% # (1) Proof: EF // BC; #% # (2) if the area is 6 △ABD, seeking BDFE quadrilateral area #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000041594_Q_1.jpg","coordinates":{"A":"-4.69,3.88","B":"-9.00,2.00","C":"-4.00,2.00","D":"-6.00,2.00","E":"-6.84,2.94","F":"-5.34,2.94"},"collineations":{"0":"A###E###B","1":"B###D###C","2":"A###C","3":"E###F","4":"A###F###D","5":"F###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: AngleBisectorRelation{line=CF,angle=∠ACD, angle1=∠ACF, angle2=∠DCF},TriangleRelation:△ABC,InequalityRelation{BC>AC},PointOnLineRelation{point=D, line=BC, isConstant=false, extension=false},EqualityRelation{CD=AC},LineCrossRelation [crossPoint=Optional.of(F), iLine1=CF, iLine2=AD],MiddlePointOfSegmentRelation{middlePoint=E,segment=AB},SegmentRelation:EF,Know:QuadrilateralRelation{quadrilateral=BDFE},EqualityRelation{S_BDFE=v_0},EqualityRelation{S_△ABD=6}, Calculation:(ExpressRelation:[key:]v_0),ProveConclusionRelation:[Proof: LineParallelRelation [iLine1=EF, iLine2=BC]],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]S_BDFE)}

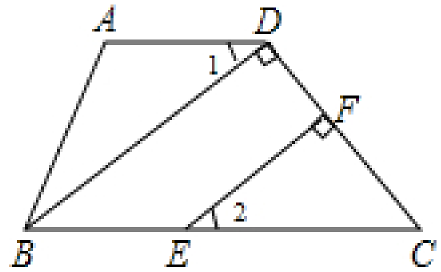
957, topic: FIG., It is known in the parallelogram ABCD, EF // BC, respectively, cross-AB, CD in E, F two, DE, AF intersect at M, CE, BF intersect at N. Proof: \$ MN =\ frac {1} {2} AB \$. #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000034240_Q_1.jpg","coordinates":{"A":"-13.00,4.00","B":"-9.00,4.00","C":"-8.00,7.00","D":"-12.00,7.00","E":"-11.00,4.00","F":"-10.00,7.00","M":"-11.50,5.50","N":"-9.50,5.50"},"collineations":{"0":"A###D","1":"A###E###B","2":"B###C","3":"D###F###C","4":"D###E###M","5":"E###N###C","6":"A###M###F","7":"F###N###B","8":"M###N","9":"E###F"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: ParallelogramRelation{parallelogram=Parallelogram:ABCD},LineParallelRelation [iLine1=EF, iLine2=BC],LineCrossRelation [crossPoint=Optional.of(E), iLine1=EF, iLine2=AB],LineCrossRelation [crossPoint=Optional.of(F), iLine1=EF, iLine2=CD],LineCrossRelation [crossPoint=Optional.of(M), iLine1=DE, iLine2=AF],LineCrossRelation [crossPoint=Optional.of(N), iLine1=CE, iLine2=BF],ProveConclusionRelation:[Proof: EqualityRelation{MN=(1/2)*AB}]

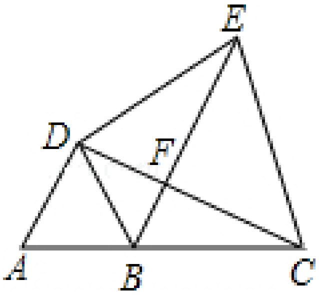
958, topic: As shown, the quadrilateral ABCD, ∠A =104 ° -∠2, ∠ABC =76 ° + ∠2, BD⊥CD in D, EF⊥CD to F #% # Test Description:. ∠1 =∠2. #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"B81D910261C04218AC5D4C41FC801B4C.jpg","coordinates":{"A":"-13.00,6.00","B":"-14.00,3.00","C":"-7.75,3.00","D":"-10.00,6.00","E":"-11.13,3.00","F":"-8.97,4.62"},"collineations":{"0":"B###A","1":"A###D","2":"B###D","3":"B###E###C","4":"D###F###C","5":"F###E"},"variable-equals":{"0":"∠1=∠ADB","1":"∠2=∠FEC"},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: Know:QuadrilateralRelation{quadrilateral=ABCD},EqualityRelation{∠BAD=(26/45*Pi)-∠CEF},EqualityRelation{∠ABE=(19/45*Pi)+∠CEF},LinePerpRelation{line1=BD, line2=CD, crossPoint=D},LinePerpRelation{line1=EF, line2=CD, crossPoint=F},ProveConclusionRelation:[Proof: EqualityRelation{∠ADB=∠CEF}]

959, topic: FIG, B is a little, △ABD and △DCE are equilateral triangles on the AC #% # (1) Prove:. AC =BE; #% # (2) if BE⊥DC, seeking ∠ BDC degree. #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000027157_Q_1.jpg","coordinates":{"A":"0.00,0.00","B":"2.00,0.00","C":"4.00,0.00","D":"1.00,1.73","E":"4.00,3.46","F":"2.50,0.87"},"collineations":{"0":"A###D","1":"C###A###B","2":"D###B","3":"D###C###F","4":"E###F###B","5":"D###E","6":"E###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[{},{"questionrelies":"1"}]}

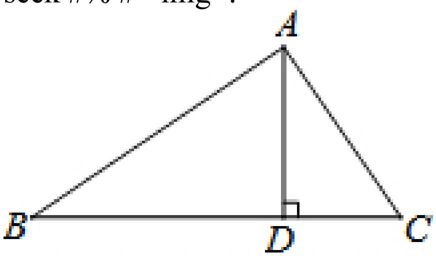
NLP: PointOnLineRelation{point=B, line=AC, isConstant=false, extension=false},RegularTriangleRelation:RegularTriangle:△ABD,RegularTriangleRelation:RegularTriangle:△DCE,LinePerpRelation{line1=BE, line2=DC, crossPoint=F},Calculation:AngleRelation{angle=∠BDF},ProveConclusionRelation:[Proof: EqualityRelation{AC=BE}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]∠BDF)}

960, topic: FIG known segment AB =12cm, point C is a fixed point on AB, the point D, E are midpoint AC, BC% of # # (1) If the point C is exactly AB. midpoint, long seeking DE;% # # (2) when the AC =4cm, long seeking DE; #% # (3) again using the "number of letters in place" method, described regardless of what value of AC (not more than 12cm), DE longer the same. #% # <img>

graph:
{"stem":{"pictures":[{"picturename":"1000081142_Q_1.jpg","coordinates":{"A":"0.00,2.00","B":"12.00,2.00","C":"4.00,2.00","D":"2.00,2.00","E":"8.00,2.00"},"collineations":{"0":"A###D###C###E###B"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: EqualityRelation{AB=12},PointOnLineRelation{point=C, line=AB, isConstant=false, extension=false},MiddlePointOfSegmentRelation{middlePoint=D,segment=AC},MiddlePointOfSegmentRelation{middlePoint=E,segment=BC},EqualityRelation{DE=v_0},MiddlePointOfSegmentRelation{middlePoint=C,segment=AB},Calculation:(ExpressRelation:[key:]v_0),EqualityRelation{DE=v_1},EqualityRelation{AC=4},Calculation:(ExpressRelation:[key:]v_1),EqualityRelation{DE=v_2},(ExpressRelation:[key:]v_2),SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]DE)},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]DE)}

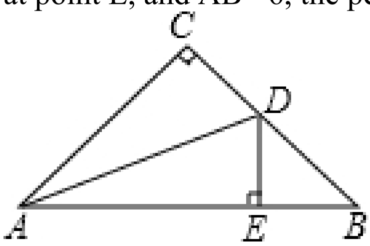
961, topic: As shown in the Rt △ABC, ∠BAC =90 °, AD⊥BC at point D, AB =8, AC =6, AD long seek #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000080214_Q_1.jpg","coordinates":{"A":"1.20,3.40","B":"-2.00,1.00","C":"3.00,1.00","D":"1.20,1.00"},"collineations":{"0":"B###D###C","1":"A###B","2":"A###C","3":"A###D"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP:
EqualityRelation{AD=v_0},RightTriangleRelation:RightTriangle:△ABC[Optional.of(A)],EqualityRelation{∠BAC=(1/2*Pi)},LinePerpRelation{line1=AD, line2=BC, crossPoint=D},EqualityRelation{AB=8},EqualityRelation{AC=6},Calculation:(ExpressRelation:[key:]v_0), SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]AD)}

962, topic: As shown in the △ABC, ∠C =90 °, AC =BC, AD bisects ∠CAB BC at point D, DE⊥AB at point E, and AB =6, the perimeter of the DEB △how much is? and please explain why. #% # <img>

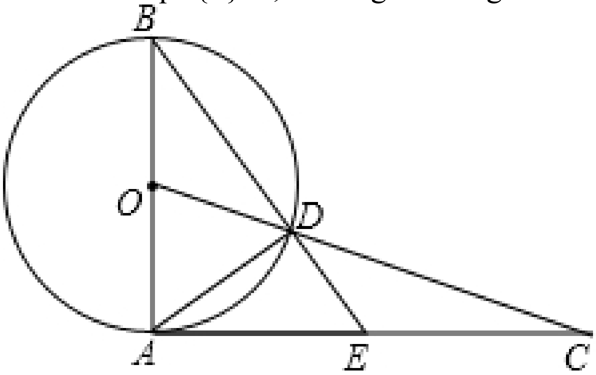


graph:
{"stem":{"pictures":[{"picturename":"1000063527_Q_1.jpg","coordinates":{"A":"-3.00,0.00","B":"3.00,0.0

0","C":"0.00,3.00","D":"1.24,1.76","E":"1.24,0.00"},"collineations":{"0":"A###B###E","1":"B###D###C","2":"A###C","3":"A###D","4":"E###D"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: EqualityRelation{C_△BDE=v_0},TriangleRelation:△ABC,EqualityRelation{∠ACD=(1/2*Pi)},EqualityRelation{AC=BC},AngleBisectorRelation{line=AD,angle=∠CAE, angle1=∠CAD, angle2=∠DAE},LineCrossRelation [crossPoint=Optional.of(D), iLine1=AD, iLine2=BC],LinePerpRelation{line1=DE, line2=AB, crossPoint=E},EqualityRelation{AB=6},Calculation:(ExpressRelation:[key:]v_0),SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]C_△BDE)}

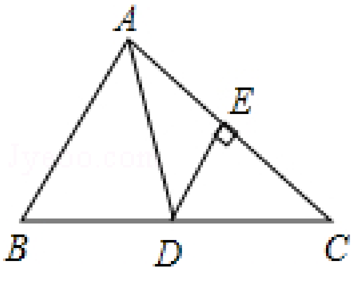
963, topic: FIG, AB is $ \ odot O $ diameter, through the point A as $ \ odot O $ tangent and point C thereon taken, cross-connect OC $ \ odot O $ at point D, BD's extension lines intersect AC at point E, is connected AD #% # (1) Proof: $ \ vartriangle CDE \ sim \ vartriangle CAD $; #% # (2) when the AB =2, $ AC =2 \ sqrt {2}. $, seeking AE long. #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000060759_Q_1.jpg","coordinates":{"A":"0.00,-1.00","B":"0.00,1.00","C":"2.80,-1.00","D":"0.94,-0.34","E":"1.43,-1.00","O":"0.00,0.00"},"collineations":{"0":"A###O###B","1":"A###E###C","2":"C###D###O","3":"E###D###B","4":"A###D"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"A###D###B"}]}],"appliedproblems":{}},"substems":[]}

NLP: DiameterRelation{diameter=AB, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, length=null},LineContactCircleRelation{line=AE, circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}, contactPoint=Optional.of(A), outpoint=Optional.of(E)},LineCrossCircleRelation{line=OC, circle=⊙O, crossPoints=[D], crossPointNum=1},LineCrossRelation [crossPoint=Optional.of(E), iLine1=BD, iLine2=AC],SegmentRelation:AD,EqualityRelation{AE=v_1},EqualityRelation{AB=2},EqualityRelation{AC=2*(2^(1/2))},Calculation:(ExpressRelation:[key:]v_1),ProveConclusionRelation:[Proof: TriangleSimilarRelation{triangleA=△CDE, triangleB=△CAD}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]AE)}

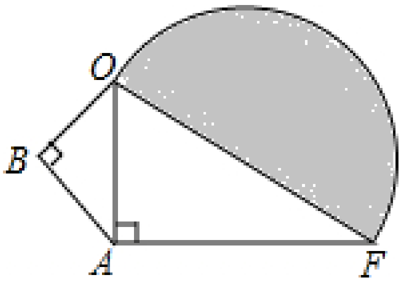
964, topic: FIG., DE is known to the perpendicular bisector AC, AB =10cm, BC =11cm, seeking △circumference of ABD #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000037609_Q_1.jpg","coordinates":{"A":"-7.00,3.00","B":"-8.39,1.00","C":"-4.00,1.00","D":"-6.17,1.00","E":"-5.50,2.00"},"collineations":{"0":"B###D###C","1":"A###E###C","2":"A###B","3":"A###D","4":"D###E"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: EqualityRelation{C_△ABD=v_0},MiddlePerpendicularRelation [iLine1=DE, iLine2=AC, crossPoint=Optional.of(E)],EqualityRelation{AB=10},EqualityRelation{BC=11},Calculation:(ExpressRelation:[key:]v_0),SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]C_△ABD)}

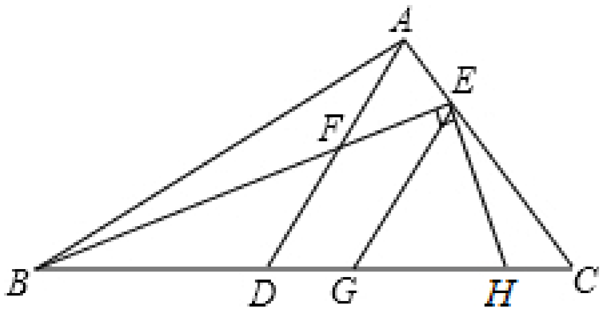
965, topic: FIG known ∠B =∠OAF =90 °, BO =3cm, AB =4cm, AF =12cm, seeking FIG semicircular area #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000062296_Q_1.jpg","coordinates":{"A":"0.00,0.00","B":"-2.43,3.17","O":"0.00,5.00","F":"12.00,0.00"},"collineations":{"0":"O###B","1":"A###B","2":"A###F","3":"O###F","4":"O###A"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: EqualityRelation{S_O_0=v_1},MultiEqualityRelation [multiExpressCompare=∠ABO=∠FAO=(1/2*Pi), originExpressRelationList=[], keyWord=null, result=null],EqualityRelation{BO=3},EqualityRelation{AB=4},EqualityRelation{AF=12},Calculation:(ExpressRelation:[key:]v_1),SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]S_O_0)}

966, topic: As shown in the △ABC, BC at the point D, point E on AC, AD F. known to cross BE EG∥AD BC at G, EH⊥BE BC at H, ∠HEG =50 ° #% # (1) the degree of demand ∠BFD;. #% # (2) if ∠BAD =∠EBC, ∠C =42 °, the degree of seeking ∠BAC #% # <img>

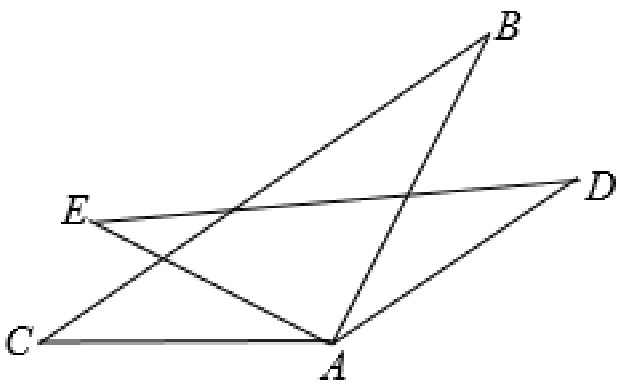


graph:
{"stem":{"pictures":[{"picturename":"E5298FABEB71425FBABB95397088A58A.jpg","coordinates":{"C":"-7.00,3.00","B":"-14.00,3.00","A":"-10.38,6.04","D":"-11.85,3.00","E":"-9.33,5.10","F":"-11.25,4.23","G":"-10.34,3.00","H":"-8.39,3.00"},"collineations":{"0":"B###G###H###D###C","1":"C###E###A","2":"E###F###B","3":"B###A","4":"A###F###D","5":"G###E","6":"E###H"},"variable-equals":{},"circles":[]}],"a

ppliedproblems":{}},"substems":[{"substemid":"2","questionrelies":"1","pictures":[],"appliedproblems":{}}]}

NLP: TriangleRelation:△ABC,PointOnLineRelation{point=D, line=BC, isConstant=false, extension=false},PointOnLineRelation{point=E, line=AC, isConstant=false, extension=false},LineCrossRelation [crossPoint=Optional.of(F), iLine1=AD, iLine2=BE],LineParallelRelation [iLine1=EG, iLine2=AD],LineCrossRelation [crossPoint=Optional.of(G), iLine1=EG, iLine2=BC],LinePerpRelation{line1=EH, line2=BE, crossPoint=E},LineCrossRelation [crossPoint=Optional.of(H), iLine1=EH, iLine2=BC],EqualityRelation{∠GEH=(5/18*Pi)},Calculation:AngleRelation{angle=∠BFD},EqualityRelation{∠BAF=∠DBF},EqualityRelation{∠ECH=(7/30*Pi)},Calculation:AngleRelation{angle=∠BAE},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]∠BFD)},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]∠BAE)}

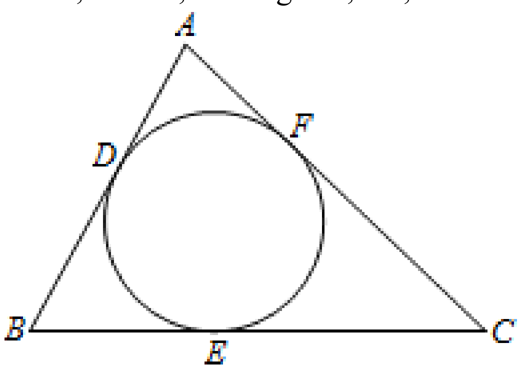
967, topic: FIG, ∠CAE =∠BAD, ∠B =∠D, AC =AE, Proof: . BC =DE #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"E60EA7ED7FB3422497B548261A02EBAF.jpg","coordinates":{"A":"-9.00,3.00","B":"-7.90,7.10","C":"-13.46,2.73","D":"-6.00,6.00","E":"-13.00,5.00"},"collineations":{"0":"B###A","1":"C###A","2":"D###A","3":"E###A","4":"D###E","5":"C###B"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: EqualityRelation{∠CAE=∠BAD},EqualityRelation{∠ABC=∠ADE},EqualityRelation{AC=AE},ProveConclusionRelation:[Proof: EqualityRelation{BC=DE}]

968, topic: FIG known $ \ odot O $ △ABC respective sides are tangent to the point D, E, F, and AB =7, BC =5, AC =8, seeking AD, BE, CF of long. #% # <img>

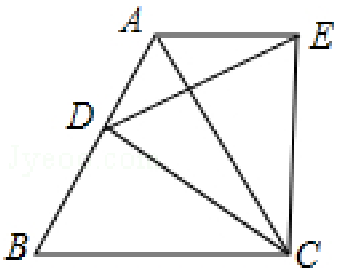


graph:
{"stem":{"pictures":[{"picturename":"1000060822_Q_1.jpg","coordinates":{"A":"-1.00,6.93","B":"-2.00,0.

00","C":"3.00,0.00","D":"-1.71,1.98","E":"0.00,0.00","F":"1.50,2.60","O":"0.00,1.73"},"collineations":{"0":"B###A###D","1":"B###C###E","2":"A###F###C"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"E###F###D"}]}],"appliedproblems":{}},"substems":[]}

NLP: PointRelation: E, PointRelation: F, EqualityRelation {AB =7}, EqualityRelation {BC =5}, EqualityRelation {AC =8}, evaluation (size) :(ExpressRelation: [key:] AD), evaluation (size) :(ExpressRelation: [key:] BE), evaluation (size) :(ExpressRelation: [key:] CF), SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] AD)}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] BE)}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] CF)}

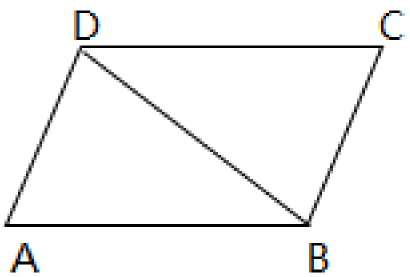
969, topic: as shown in FIG equilateral △ABC, D is a fixed point (not with A, B overlap) the edge AB, CD as to one side, as the upward equilateral △EDC, connected to AE #% #. (1) Proof: whether the presence of the triangular relationship between the rotational AE // BC #% # (2) in FIG. if so, please say the center of rotation and the rotation angle; if not, the reasons #% # <img>.?.



graph:
{"stem":{"pictures":[{"picturename":"1000031525_Q_1.jpg","coordinates":{"A":"-8.50,2.60","B":"-10.00,0.00","C":"-7.00,0.00","D":"-9.14,1.50","E":"-6.77,2.60"},"collineations":{"0":"A###B###D","1":"A###C","2":"B###C","3":"D###E","4":"D###C","5":"E###C","6":"A###E"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: PointRelation:A,PointRelation:B,RegularTriangleRelation:RegularTriangle:△ABC,PointOnLineRelation{point=D, line=AB, isConstant=false, extension=false},SegmentRelation:CD,SegmentRelation:AE,ProveConclusionRelation:[Proof: LineParallelRelation [iLine1=AE, iLine2=BC]]

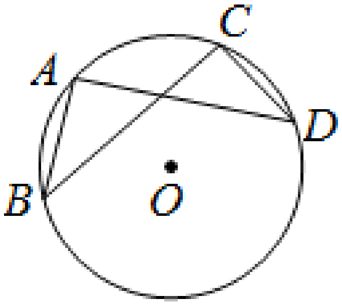
970, topic: As shown, the quadrilateral ABCD, AB =CD, AD =CB ,, Prove ∠A =∠C.



graph:
{"stem":{"pictures":[{"picturename":"EA54A17FB3CD4DBBA07F4468DFC5F7A9.jpg","coordinates":{"A":"-14.00,3.00","B":"-10.00,3.00","C":"-9.00,6.00","D":"-13.00,6.00"},"collineations":{"0":"B###A","1":"D###A","2":"B###C","3":"C###D","4":"D###B"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: known conditions QuadrilateralRelation {quadrilateral =ABCD}, EqualityRelation {AB =CD}, EqualityRelation {AD =BC}, ProveConclusionRelation: [Proof: EqualityRelation {∠BAD =∠BCD}]

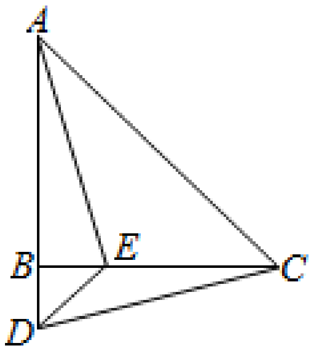
971, topic: As shown in the ⊙O, AB =CD, confirmation AD =BC #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000060705_Q_1.jpg","coordinates":{"A":"-2.99,2.66","B":"-4.00,0.00","C":"2.99,2.66","D":"4.00,0.00","O":"0.00,0.00","F":"0.00,1.52"},"collineations":{"0":"B###C###F","1":"D###A###F","2":"A###B","3":"C###D"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"A###B###C###D"}]}],"appliedproblems":{}},"substems":[]}

NLP: CircleRelation{circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}},EqualityRelation{AB=CD},ProveConclusionRelation:[Proof: EqualityRelation{AD=BC}]

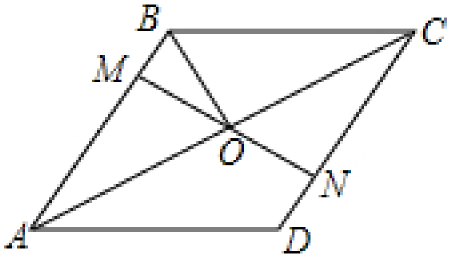
972, topic: As shown in the △ABC, AB =CB, ∠ABC =90 °, D is the bit extension line AB, the point E at the edge BC and BE =BD, connected AE, DE, DC #. % # (1) Proof: △ABE≌ △CBD; #% # (2) if ∠CAE =30 °, the degree of seeking ∠BDC #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"EC4398B45BF1485686DF8F1CD632D3D0.jpg","coordinates":{"A":"-14.00,7.00","B":"-14.00,3.00","C":"-10.00,3.00","D":"-14.00,1.93","E":"-12.93,3.00"},"collineations":{"0":"B###D###A","1":"D###A","2":"C###A","3":"B###E###C","4":"C###D","5":"D###E"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[{"substemid":"2","questionrelies":"1","pictures":[],"appliedproblems":{}}]}

NLP: TriangleRelation:△ABC,EqualityRelation{AB=BC},EqualityRelation{∠ABE=(1/2*Pi)},PointOnLineRelation{point=D, line=AB, isConstant=false, extension=true},PointOnLineRelation{point=E, line=BC, isConstant=false, extension=false},EqualityRelation{BE=BD},SegmentRelation:AE,SegmentRelation:DE,SegmentRelation:DC,EqualityRelation{∠CAE=(1/6*Pi)},Calculation:AngleRelation{angle=∠BDC},ProveConclusionRelation:[Proof: TriangleCongRelation{triangleA=△ABE, triangleB=△CBD}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]∠BDC)}

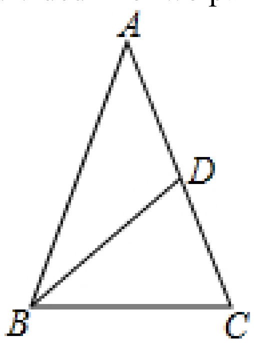
973, topic: FIG, at diamond ABCD, the points M, N, respectively, in the AB, CD, and AM =CN, MN and AC at point O, the connection BO #% # (1) Prove:. △AMO≌ △CNO;. #% # (2) if ∠DAC =28 °, the degree ∠OBC #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000034567_Q_1.jpg","coordinates":{"A":"-3.10,1.53","B":"-0.92,4.77","C":"2.81,4.77","D":"0.64,1.53","M":"-1.42,4.02","N":"1.14,2.28","O":"-0.14,3.15"},"collineations":{"0":"B###M###A","1":"A###O###C","2":"A###D","3":"D###N###C","4":"N###O###M","5":"B###C","6":"B###O"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[{"substemid":"1","questionrelies":"","pictures":[],"appliedproblems":{}},{"substemid":"2","questionrelies":"","pictures":[],"appliedproblems":{}}]}

NLP: RhombusRelation{rhombus=Rhombus:ABCD},PointOnLineRelation{point=M, line=AB, isConstant=false, extension=false},PointOnLineRelation{point=N, line=CD, isConstant=false, extension=false},EqualityRelation{AM=CN},LineCrossRelation [crossPoint=Optional.of(O), iLine1=MN, iLine2=AC],SegmentRelation:BO,EqualityRelation{∠DAO=(7/45*Pi)},Calculation:AngleRelation{angle=∠CBO},ProveConclusionRelation:[Proof: TriangleCongRelation{triangleA=△AMO, triangleB=△CNO}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]∠CBO)}

974, topic: the isosceles △ABC is known AB =AC, BD midline to the circumference of the triangle is divided into two parts, 15cm and 18cm, long seeking base BC #% # <img>.

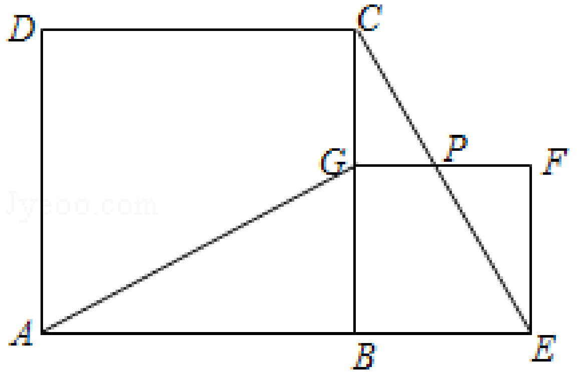


graph:
{"stem":{"pictures":[{"picturename":"1000032720_Q_1.jpg","coordinates":{"A":"1.50,3.71","B":"0.00,0.00","C":"3.00,0.00","D":"2.25,1.85"},"collineations":{"0":"A###B","1":"B###C","2":"C###D###A","3":"B###D"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: EqualityRelation{BC=v_0},IsoscelesTriangleRelation:IsoscelesTriangle:△ABC[Optional.of(A)],EqualityRelation{AB=AC}

975, topic: FIG, B is a known point on the line segment AE, and the quadrangle ABCD are square quadrangular BEFG connected AG, CE #% # (1) Prove:. AG =CE; #% # (2) disposed CE GF intersections is

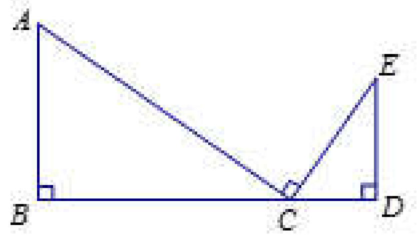
P, Proof: $ \ frac {PG} {CG} =\ frac {PE} {AG} $ #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000035317_Q_1.jpg","coordinates":{"A":"0.00,0.00","B":"3.00,0.00","C":"3.00,3.00","D":"0.00,3.00","E":"4.67,0.00","F":"4.67,1.67","G":"3.00,1.67","P":"3.74,1.67"},"collineations":{"0":"A###B###E","1":"B###G###C","2":"C###D","3":"D###A","4":"A###G","5":"E###F","6":"F###P###G"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: PointOnLineRelation{point=B, line=AE, isConstant=false, extension=false},SquareRelation{square=Square:ABCD},SquareRelation{square=Square:BEFG},SegmentRelation:AG,SegmentRelation:CE,LineCrossRelation [crossPoint=Optional.of(P), iLine1=CE, iLine2=GF],ProveConclusionRelation:[Proof: EqualityRelation{AG=CE}],ProveConclusionRelation:[Proof: EqualityRelation{((GP)/(CG))=((EP)/(AG))}]

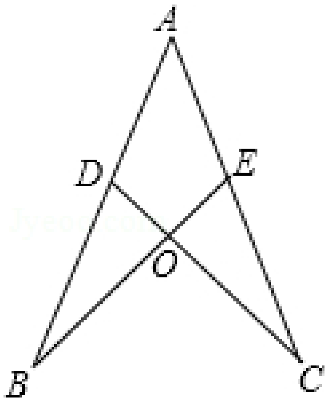
976, topic:. As shown, $ C $ to a point, $ AC \ bot CE $, $ AB⊥BD $, $ ED⊥BD $ $ confirmation on the BD line $: $ \ frac {AB} {CD} =\ frac {BC} {DE} $.



graph:
{"stem":{"pictures":[{"picturename":"1000010782_Q_1.jpg","coordinates":{"A":"0.00,5.00","B":"0.00,0.00","C":"8.00,0.00","D":"10.50,0.00","E":"10.50,4.00"},"collineations":{"0":"B###C###D","1":"D###E","2":"E###C","3":"A###C","4":"A###B"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: PointOnLineRelation{point=C, line=BD, isConstant=false, extension=false},LinePerpRelation{line1=AC, line2=CE, crossPoint=C},LinePerpRelation{line1=AB, line2=BD, crossPoint=B},LinePerpRelation{line1=ED, line2=BD, crossPoint=D},ProveConclusionRelation:[Proof: EqualityRelation{((AB)/(CD))=((BC)/(DE))}]

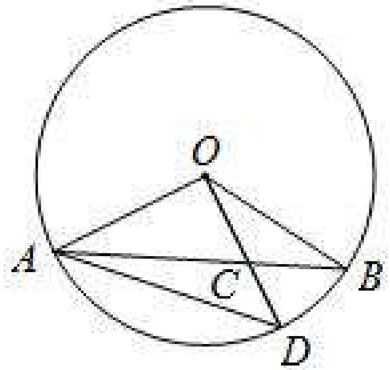
977, topic: FIG, point D on AB, the point E on the AC, AB =AC, AD =AE confirmation ∠B =∠C #% # <img>..



graph:
{"stem":{"pictures":[{"picturename":"1000033321_Q_1.jpg","coordinates":{"A":"6.2,-1.3","B":"1.1,-13.4","C":"11.1,-13.4","D":"4.0,-6.5","E":"8.4,-6.5","O":"6.1,-8.6"},"collineations":{"0":"A###D###B","1":"B###O###E","2":"C###O###D","3":"A###E###C"},"variable-equals":{"0":"∠ABE=∠ACD"},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: PointOnLineRelation{point=D, line=AB, isConstant=false, extension=false},PointOnLineRelation{point=E, line=AC, isConstant=false, extension=false},EqualityRelation{AB=AC},EqualityRelation{AD=AE},ProveConclusionRelation:[Proof: EqualityRelation{∠DBO=∠ECO}]

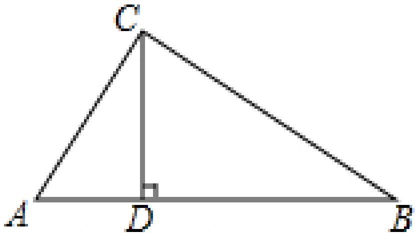
978, topic: As shown in the $ ⊙O $, $ ∠AOB =120 ° $, $ OD⊥OA $ to O, AB cross between C, to deposit $ ⊙O $ D. Proof: $ {AD} ^ 2 =AC \ cdot AB $



graph:
{"stem":{"pictures":[{"picturename":"1000008175_Q_1.jpg","coordinates":{"A":"-5.20,-3.00","B":"5.20,-3.00","C":"1.73,-3.00","D":"3.00,-5.20","O":"0.00,0.00"},"collineations":{"0":"O###A","1":"O###B","2":"O###D###C","3":"D###A","4":"A###B","5":"B###D"},"variable-equals":{},"circles":[{"center":"O","pointincircle":"A###B###D"}]}],"appliedproblems":{}},"substems":[]}

NLP: CircleRelation{circle=Circle[⊙O]{center=O, analytic=(x-x_O)^2+(y-y_O)^2=r_O^2}},EqualityRelation{∠AOB=(2/3*Pi)},LinePerpRelation{line1=OD, line2=OA, crossPoint=O},LineCrossRelation [crossPoint=Optional.of(C), iLine1=OD, iLine2=AB],LineCrossCircleRelation{line=OD, circle=⊙O, crossPoints=[D], crossPointNum=1},ProveConclusionRelation:[Proof: EqualityRelation{(AD)^2=AC*AB}]

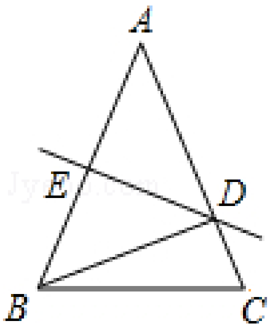
979, topic: As shown in the Rt △ABC, ∠ACB =90 °, AC =5, BC =12, CD AB is the hypotenuse of a high, long seeking AD #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000082196_Q_1.jpg","coordinates":{"A":"-2.60,0.00","B":"0.00,0.00","C":"-2.21,0.92","D":"-2.21,0.00"},"collineations":{"0":"A###D###B","1":"A###C","2":"B###C","3":"D###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP:
EqualityRelation{AD=v_0},RightTriangleRelation:RightTriangle:△ABC[Optional.of(C)],EqualityRelation{∠ACB=(1/2*Pi)},EqualityRelation{AC=5},EqualityRelation{BC=12},LinePerpRelation{line1=CD, line2=AB, crossPoint=D},Calculation:(ExpressRelation:[key:]v_0),LinePerpRelation{line1=CD, line2=AD, crossPoint=D},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]AD)}

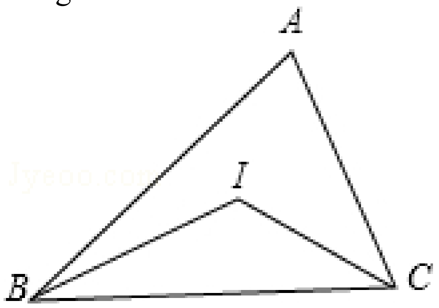
980, topic: As shown in the △ABC, DE is the perpendicular bisector of the side AB, AB in the cross-E, cross AC to D, connected BD #% # (1) if ∠ABC =∠C, ∠. a =50 °, the degree of seeking ∠DBC. #% # (2) If AB =AC, and △BCD circumference of 18cm, the perimeter of △ABC is 30cm, BE seeking long. #% # <img>



graph:
{"stem":{"pictures":[],"appliedproblems":{}},"substems":[{"substemid":"1","questionrelies":"","pictures":[{"picturename":"1000030973_Q_1.jpg","coordinates":{"A":"-10.00,6.00","B":"-12.00,3.00","C":"-8.99,2.53","D":"-9.21,3.31","E":"-11.00,4.50"},"collineations":{"0":"A###D###C","1":"A###E###B","2":"E###D","3":"B###D","4":"B###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},{"substemid":"2","questionrelies":"","pictures":[{"picturename":"1000030973_Q_1.jpg","coordinates":{"A":"-12.00,7.00","B":"-12.81,6.11","C":"-11.84,5.84","D":"-11.87,6.08","E":"-12.40,6.56"},"collineations":{"0":"A###D###C","1":"A###E###B","2":"E###D","3":"B###C","4":"D###E"},"variable-equals":{},"circles":[]}],"appliedproblems":{}}]}

NLP: TriangleRelation:△ABC,MiddlePerpendicularRelation [iLine1=DE, iLine2=AB, crossPoint=Optional.of(E)],LineCrossRelation [crossPoint=Optional.of(E), iLine1=DE, iLine2=AB],LineCrossRelation [crossPoint=Optional.of(D), iLine1=DE, iLine2=AC],SegmentRelation:BD,EqualityRelation{∠CBE=∠BCD},EqualityRelation{∠DAE=(5/18*Pi)},Calculation:AngleRelation{angle=∠CBD},EqualityRelation{BE=v_0},EqualityRelation{AB=AC},EqualityRelation{C_△BCD=18},EqualityRelation{C_△ABC=30},Calculation:(ExpressRelation:[key:]v_0),SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]∠CBD)},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]BE)}

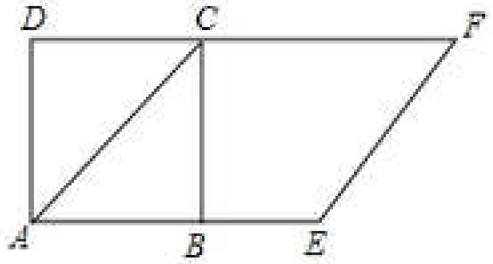
981, topic: As shown in the △ABC, ∠A =68 °, the point I is the heart, the demand degree ∠I #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000083380_Q_1.jpg","coordinates":{"A":"0.24,1.64","B":"-1.96,-2.57","C":"2.49,-1.01","I":"0.48,-0.46"},"collineations":{"0":"A###B","1":"B###C","2":"C###A","3":"B###I","4":"C###I"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleRelation: △ABC, EqualityRelation {∠BAC =(17/45 * Pi)}, PointRelation: I, find the size of the angle: AngleRelation {angle =∠BIC}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation : [key:] ∠BIC)}

982, topic: FIG, AC diagonal of a square with one side of ABCD, AB extended to E, so that AE =AC, while the AE is as diamond AEFC, if an area of the diamond $ 9 \ sqrt {2} $, seek square side length? #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000041807_Q_1.jpg","coordinates":{"A":"-15.00,4.00","B":"-13.00,4.00","C":"-13.00,6.00","D":"-15.00,6.00","E":"-12.17,4.00","F":"-10.19,6.00"},"collineations":{"0":"E###F","1":"D###C###F","2":"A###D","3":"B###C","4":"A###B###E","5":"A###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: SquareRelation {square =Square: ABCD}, PointOnLineRelation {point =E, line =AB, isConstant =false, extension =true}, EqualityRelation {AE =AC}, RhombusRelation {rhombus =Rhombus: AEFC}, RhombusRelation {rhombus =Rhombus: AEFC}, EqualityRelation {S_ACFE =9 * (2 ^ (1/2))}, SquareRelation {square =Square: ABCD}, evaluation (size) :(ExpressRelation: [key:] AB), evaluation (size) :(ExpressRelation: [key:] BC), evaluation (size) :(ExpressRelation: [key:] CD), evaluation (size) :(ExpressRelation: [key:] AD), SolutionConclusionRelation {relation =seek value (size) :(ExpressRelation: [key:] AB)}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] BC)}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] CD)}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] AD)}

983, topic: 1, in the △EDC and △ABC, AC =CE =CB =CD, ∠ACB =∠DCE =90 °, AB and CE at point F, ED and AB, BC respectively at point . M, H #% # (1) Proof: CF =CH; #% # (2) in FIG. 2, △ABC does not move, the point C is rotated about △EDC to ∠BCE =45 °, the test is determined quadrangular ACDM shape, and prove your conclusions. #% # <img>

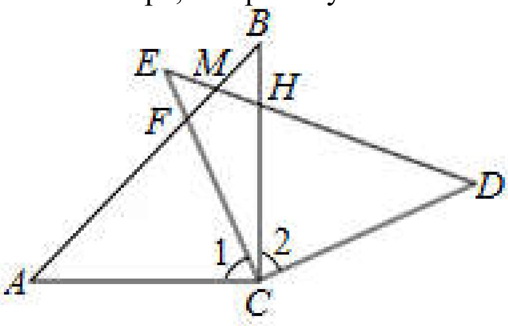


图1

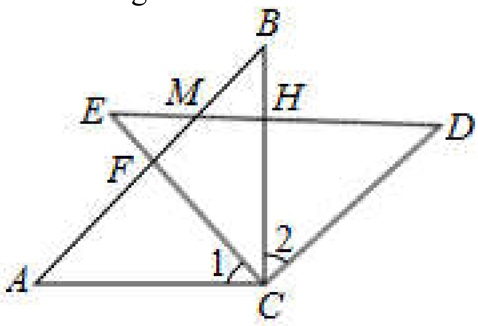
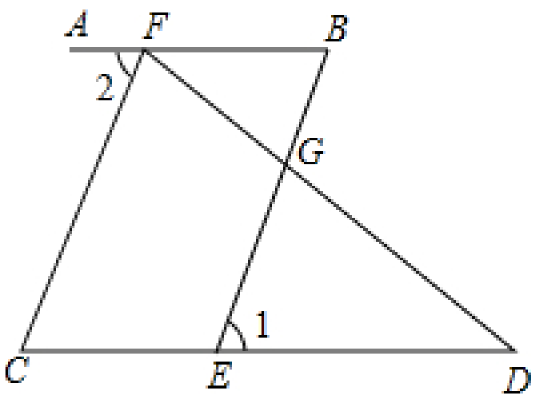


图2

graph:
{"stem":{"pictures":[],"appliedproblems":{}},"substems":[{"substemid":"1","questionrelies":"","pictures":[{"picturename":"1000040719_Q_1.jpg","coordinates":{"A":"-2.99,0.00","B":"0.00,2.99","C":"0.00,0.00","D":"2.72,1.24","E":"-1.24,2.72","F":"-0.94,2.05","H":"0.00,2.26","M":"-0.53,2.46"},"collineations":{"0":"B###M###F###A","1":"A###C","2":"C###H###B","3":"E###F###C","4":"C###D","5":"D###H###M###E"},"variable-equals":{"0":"∠1=∠ECA","1":"∠2=∠BCD"},"circles":[]}],"appliedproblems":{}},{"substemid":"2","questionrelies":"","pictures":[{"picturename":"1000040719_Q_1.jpg","coordinates":{"A":"-2.67,-4.00","B":"0.00,-1.32","C":"0.00,-4.00","D":"1.88,-2.09","E":"-1.90,-2.12","F":"-1.35,-2.67","H":"-0.01,-2.11","M":"-0.79,-2.11"},"collineations":{"0":"B###M###F###A","1":"A###C","2":"C###H###B","3":"E###F###C","4":"C###D","5":"D###H###M###E"},"variable-equals":{"0":"∠1=∠ECA","1":"∠2=∠BCD"},"circles":[]}],"appliedproblems":{}}]}

NLP: TriangleRelation:△ABC,TriangleRelation:△EDC,MultiEqualityRelation [multiExpressCompare=AC=CE=BC=CD, originExpressRelationList=[], keyWord=null, result=null],MultiEqualityRelation [multiExpressCompare=∠ACH=∠DCF=(1/2*Pi), originExpressRelationList=[], keyWord=null, result=null],LineCrossRelation [crossPoint=Optional.of(F), iLine1=AB, iLine2=CE],LineCrossRelation [crossPoint=Optional.of(M), iLine1=ED, iLine2=AB],LineCrossRelation [crossPoint=Optional.of(H), iLine1=ED, iLine2=BC],(ExpressRelation:[key:]2),TriangleRelation:△ABC,ProveConclusionRelation:[Proof: EqualityRelation{CF=CH}],ShapeJudgeConclusionRelation{geoEle=ACDM}

984, topic: Given: FIG, ∠C =∠1, ∠2 and ∠D Remainder, BE⊥FD at point G. Prove:. AB∥CD #% # <img>

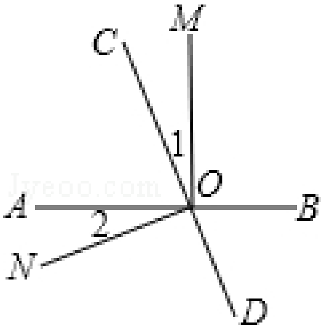


graph:
{"stem":{"pictures":[{"picturename":"1000032962_Q_1.jpg","coordinates":{"A":"0.63,2.36","B":"3.67,2.36

","C":"0.00,0.00","D":"5.00,0.00","E":"2.00,0.00","F":"1.67,2.36","G":"3.00,1.41"},"collineations":{"0":"B###A###F","1":"B###G###E","2":"G###F###D","3":"C###E###D","4":"C###F"},"variable-equals":{"0":"∠1=∠BED","1":"∠2=∠AFC"},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: EqualityRelation{∠ECF=∠DEG},AngleComplementRelation:∠AFC/∠EDG,LinePerpRelation{line1=BE, line2=FD, crossPoint=G},ProveConclusionRelation:[Proof: LineParallelRelation [iLine1=AB, iLine2=CD]]

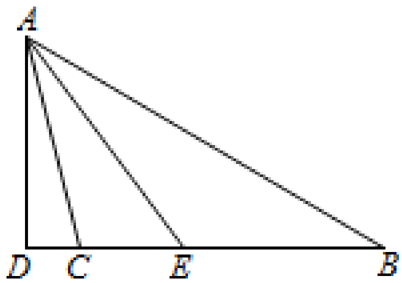
985, topic: As shown, the straight line AB, CD intersect at point O, OM⊥AB, pedal is O #% # (1) if ∠1 =∠2, seeking ∠NOD; #% # (2) if $. \ angle 1 \ text {=} \ frac {1} {4} \ angle BOC $, and seeking ∠AOC ∠MOD. #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"3E72768D7A854762BAF12919A54ED10A.jpg","coordinates":{"A":"-14.00,4.00","B":"-6.00,4.00","C":"-12.00,7.46","D":"-8.55,1.48","M":"-10.00,8.00","N":"-12.58,2.51","O":"-10.00,4.00"},"collineations":{"0":"A###O###B","1":"D###C###O","2":"O###N","3":"O###M"},"variable-equals":{"0":"∠1=∠COM","1":"∠2=∠AON"},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: LineCrossRelation [crossPoint =Optional.of (O), iLine1 =AB, iLine2 =CD], LinePerpRelation {line1 =OM, line2 =AB, crossPoint =O}, EqualityRelation {∠COM =∠AON}, the size of the required angle : AngleRelation {angle =∠DON}, EqualityRelation {∠COM =(1/4) * ∠BOC}, aNGULAR size: AngleRelation {angle =∠AOC}, aNGULAR size: AngleRelation {angle =∠DOM}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] ∠DON)}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] ∠AOC)}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] ∠DOM)}

986, topic: FIG, AD⊥BD, AE equally ∠BAC, ∠B =30 °, ∠ACD =70 °, the required degree ∠AED #% # <img>.

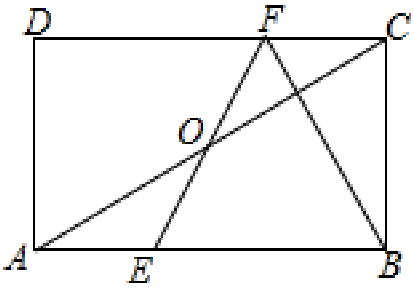


graph:
{"stem":{"pictures":[{"picturename":"1000063556_Q_1.jpg","coordinates":{"A":"-5.00,2.89","B":"0.00,0.00","C":"-3.94,0.00","D":"-5.00,0.00","E":"-3.33,0.00"},"collineations":{"0":"A###B","1":"A###D","2":"D###C###E###B","3":"A###C","4":"A###E"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"subs

tems":[]}

NLP: LinePerpRelation {line1 =AD, line2 =BD, crossPoint =D}, AngleBisectorRelation {line =AE, angle =∠BAC, angle1 =∠BAE, angle2 =∠CAE}, EqualityRelation {∠ABE =(1/6 * Pi)}, EqualityRelation {∠ACD =(7/18 * Pi)}, find the size of the angle: AngleRelation {angle =∠AEC}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] ∠AEC) }

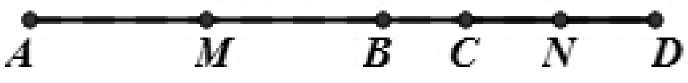
987, topic: As shown in the rectangle ABCD, E, F are side AB, a point on the CD, AE =CF, connected EF, BF, EF and diagonal line AC at point O, and BE =BF, . ∠BEF =2∠BAC #% # (1) Proof: OE =oF; #% # (2) find the degree of ∠EBF; #% # (3) if $ BC =2 \ sqrt {3} $, seek the area of the rectangle ABCD. #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000034741_Q_1.jpg","coordinates":{"A":"1.00,0.00","B":"7.98,-0.03","C":"8.00,4.00","D":"1.02,4.03","E":"3.33,-0.01","F":"5.67,4.01","O":"4.50,2.00"},"collineations":{"0":"D###A","1":"B###C","2":"B###F","3":"A###E###B","4":"D###F###C","5":"E###O###F","6":"A###O###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: RectangleRelation{rectangle=Rectangle:ABCD},PointOnLineRelation{point=E, line=AB, isConstant=false, extension=false},PointOnLineRelation{point=F, line=CD, isConstant=false, extension=false},EqualityRelation{AE=CF},MultiPointCollinearRelation:[E, F],MultiPointCollinearRelation:[B, F],LineCrossRelation [crossPoint=Optional.of(O), iLine1=AC, iLine2=EF],EqualityRelation{BE=BF},EqualityRelation{∠BEO=2*∠EAO},Calculation:AngleRelation{angle=∠EBF},RectangleRelation{rectangle=Rectangle:ABCD},EqualityRelation{S_ABCD=v_0},EqualityRelation{BC=2*(3^(1/2))},Calculation:(ExpressRelation:[key:]v_0),ProveConclusionRelation:[Proof: EqualityRelation{EO=FO}],SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]∠EBF)},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]S_ABCD)}

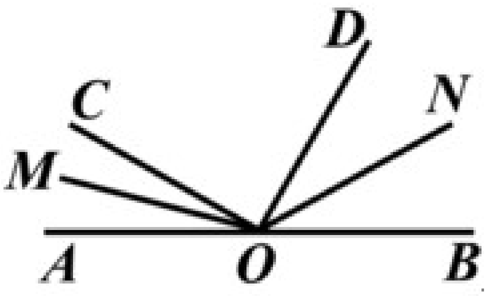
988, topic: as shown, $ B point, the line segment C $ $ $ the AD, point M is the midpoint of $ AB $, $ point N is the midpoint of the CD $, if $ MN =8, BC =2, the $ AD $ $ how much longer?



graph:
{"stem":{"pictures":[{"picturename":"3F09CF78B6B54F88AEC7A0F72E57F2C6.jpg","coordinates":{"A":"-14.00,3.00","B":"-6.00,3.00","C":"-4.00,3.00","D":"0.00,3.00","M":"-10.00,3.00","N":"-2.00,3.00"},"collineations":{"0":"A###M###B###C###N###D"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: EqualityRelation{AD=v_0},PointOnLineRelation{point=B, line=AD, isConstant=false, extension=false},PointOnLineRelation{point=C, line=AD, isConstant=false, extension=false},MiddlePointOfSegmentRelation{middlePoint=M,segment=AB},MiddlePointOfSegmentRelation{middlePoint=N,segment=CD},EqualityRelation{MN=8},EqualityRelation{BC=2},Calculation:(ExpressRelation:[key:]v_0),SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]AD)}

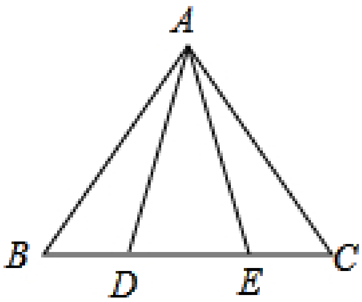
989, topic: As shown in FIG, $ ∠AOB $ straight angle, OM, ON are $ ∠AOC $, $ ∠BOD $ bisector% # # (1) known $ ∠AOC =30 ° $.? , $ ∠BOD =60 ° $, seeking $ ∠MON $ degree;? #% # (2) if known only "$ ∠COD =90 ° $", you can find $ ∠MON $ degree it? If you can request that, if not, please explain why.



graph:
{"stem":{"pictures":[{"picturename":"1000026019_Q_1.jpg","coordinates":{"A":"-5.00,0.00","B":"5.00,0.00","C":"-4.33,2.50","D":"2.50,4.33","M":"-4.83,1.29","N":"4.33,2.50","O":"0.00,0.00"},"collineations":{"0":"O###A###B","1":"O###D","2":"O###M","3":"O###N","4":"O###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: known conditions FlatAngleRelation: ∠AOB / FLAT_ANGLE, AngleBisectorRelation {line =OM, angle =∠AOC, angle1 =∠AOM, angle2 =∠COM}, AngleBisectorRelation {line =ON, angle =∠BOD, angle1 =∠BON, angle2 =∠DON}, EqualityRelation {∠AOC =(1/6 * Pi)}, EqualityRelation {∠BOD =(1/3 * Pi)}, find the size of the angle: AngleRelation {angle =∠MON}, SolutionConclusionRelation {relation =evaluation (size) :(ExpressRelation: [key:] ∠MON)}

990, topic: As shown, the isosceles △ABC, AB =AC, points D, E on the side BC, BD =CE, the test described △AEB≌ △ADC #% # <img>.

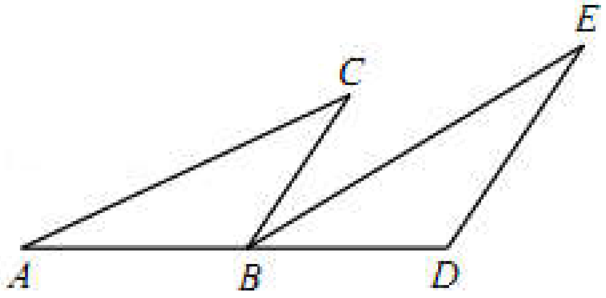


graph:
{"stem":{"pictures":[{"picturename":"1000060018_Q_1.jpg","coordinates":{"A":"1.00,3.00","B":"-1.00,0.00","C":"3.00,0.00","D":"0.00,0.00","E":"2.00,0.00"},"collineations":{"0":"B###D###E###C","1":"A###C","2":"A###E","3":"A###D","4":"A###B"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP:
IsoscelesTriangleRelation:IsoscelesTriangle:△ABC[Optional.of(A)],EqualityRelation{AB=AC},PointOnLineRelation{point=D, line=BC, isConstant=false, extension=false},PointOnLineRelation{point=E, line=BC, isConstant=false, extension=false},EqualityRelation{BD=CE},ProveConclusionRelation:[Proof:

TriangleCongRelation{triangleA=△AEB, triangleB=△ADC}]

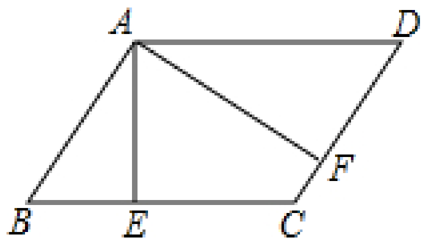
991, topic: FIG., The point B on the line segment AD, BC∥DE, AB =ED, BC =DB, Proof: . ∠A =∠E #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"AB075604ECA44AF487A330820DE2D4A0.jpg","coordinates":{"A":"-14.00,3.00","B":"-10.00,3.00","C":"-8.66,5.69","D":"-7.00,3.00","E":"-5.22,6.58"},"collineations":{"0":"B###A###D","1":"A###C","2":"B###C","3":"E###B","4":"D###E"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: PointOnLineRelation{point=B, line=AD, isConstant=false, extension=false},LineParallelRelation[iLine1=BC, iLine2=DE],EqualityRelation{AB=DE},EqualityRelation{BC=BD},ProveConclusionRelation:[Proof: EqualityRelation{∠BAC=∠BED}]

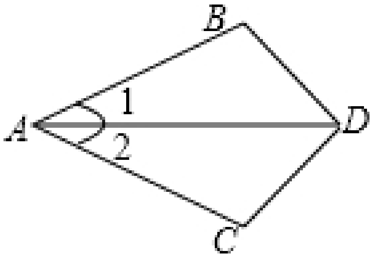
992, topic: As shown in the □ABCD, AE⊥BC at point E, AF⊥CD at point F, ∠EAF =60 °, EC =2, CF =1, and seek □ABCD perimeter of ∠B degree. #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000084524_Q_1.jpg","coordinates":{"A":"-4.97,3.11","B":"-7.67,-1.49","C":"-1.00,-1.53","D":"1.69,3.07","E":"-5.00,-1.51","F":"0.01,0.19"},"collineations":{"0":"B###E###C","1":"C###F###D","2":"A###D","3":"E###A","4":"F###A","5":"A###B"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: ParallelogramRelation{parallelogram=Parallelogram:ABCD},EqualityRelation{C_ABCD=v_0},ParallelogramRelation{parallelogram=Parallelogram:ABCD},LinePerpRelation{line1=AE, line2=BC, crossPoint=E},LinePerpRelation{line1=AF, line2=CD, crossPoint=F},EqualityRelation{∠EAF=(1/3*Pi)},EqualityRelation{CE=2},EqualityRelation{CF=1},Calculation:(ExpressRelation:[key:]v_0), Calculation:AngleRelation{angle=∠ABE},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]C_ABCD)},SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]∠ABE)}

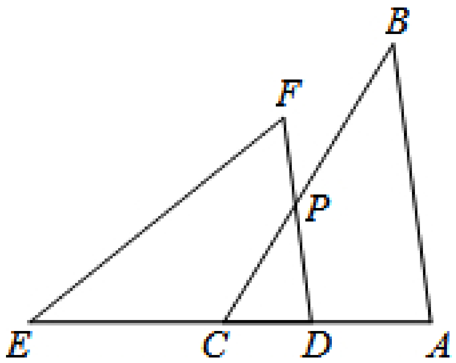
993, topic: Given: FIG, ∠1 =∠2, AB =AC Proof: BD =CD #% # <img>.



graph:
{"stem":{"pictures":[{"picturename":"1000072625_Q_1.jpg","coordinates":{"A":"0.00,0.00","B":"3.18,1.48","C":"3.18,-1.48","D":"4.93,0.00"},"collineations":{"0":"A###B","1":"A###D","2":"A###C","3":"B###D","4":"C###D"},"variable-equals":{"0":"∠1=∠BAD","1":"∠2=∠DAC"},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: EqualityRelation{∠BAD=∠CAD},EqualityRelation{AB=AC},ProveConclusionRelation:[Proof: EqualityRelation{BD=CD}]

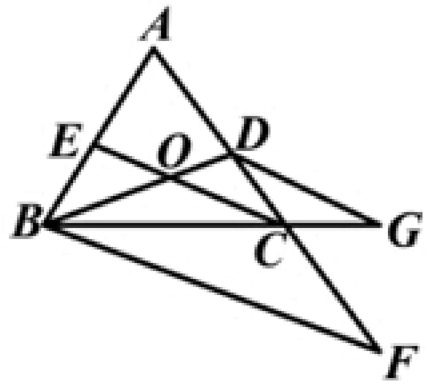
994, topic: FIG, known point E, C, D, A in the same line, AB // DF, ED =AB, ∠E =∠CPD Proof: △ABC≌ △DEF #% # <img. >



graph:
{"stem":{"pictures":[{"picturename":"1000035491_Q_1.jpg","coordinates":{"A":"-2.00,2.00","B":"-3.00,5.00","C":"-5.00,2.00","D":"-3.49,2.00","E":"-6.59,2.00","F":"-4.42,4.78","P":"-3.99,3.51"},"collineations":{"0":"B###A","1":"E###F","2":"B###P###C","3":"F###P###D","4":"E###C###D###A"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: PointRelation:E,PointRelation:C,PointRelation:D,LineParallelRelation [iLine1=AB, iLine2=DF],EqualityRelation{DE=AB},EqualityRelation{∠CEF=∠CPD},ProveConclusionRelation:[Proof: TriangleCongRelation{triangleA=△ABC, triangleB=△DEF}]

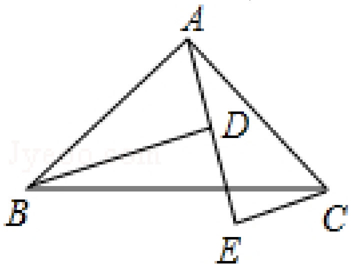
995, topic: FIG, point D on the AC, point F, G, respectively, on the extension line AC, BC's, CE bisecting $ ∠ACB $, BD cross at point O, and $ ∠EOD + ∠OBF =180 ° $., $ ∠F =∠G $ confirmation: $ DG // CE $.



graph:
{"stem":{"pictures":[{"picturename":"1000021319_Q_1.jpg","coordinates":{"A":"0.57,-0.19","B":"0.17,-0.84","C":"1.07,-0.84","D":"0.87,-0.57","F":"1.42,-1.32","G":"1.52,-0.84","O":"0.64,-0.67","E":"0.35,-0.54"},"collineations":{"0":"D###O###B","1":"E###A###B","2":"D###G","3":"E###C###O","4":"A###C###D###F","5":"F###B","6":"B###C###G"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: PointOnLineRelation{point=D, line=AC, isConstant=false, extension=false},PointOnLineRelation{point=F, line=AC, isConstant=false, extension=false},PointOnLineRelation{point=G, line=BC, isConstant=false, extension=false},AngleBisectorRelation{line=CE,angle=∠BCD, angle1=∠BCE, angle2=∠DCE},LineCrossRelation [crossPoint=Optional.of(O), iLine1=CE, iLine2=BD],EqualityRelation{∠DOE+∠FBO=(Pi)},EqualityRelation{∠BFC=∠CGD},ProveConclusionRelation:[Proof: LineParallelRelation [iLine1=DG, iLine2=CE]]

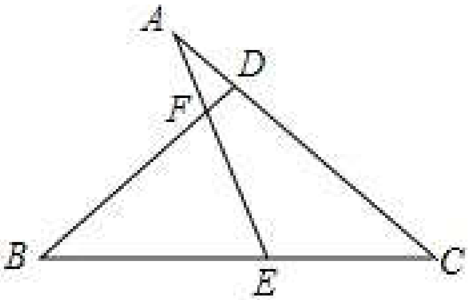
996, topic: FIG., A, D, E three points on the same straight line, and △BAD≌ △ACE #% # (1) Show that BD =DE + CE; what #% # (2) △ABD satisfied. when conditions, BD // CE? #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"AE9A1B2A79974F968D85FC22EBC6392B.jpg","coordinates":{"A":"-10.00,8.00","B":"-14.00,4.00","C":"-6.00,4.00","D":"-9.18,6.25","E":"-7.75,3.18"},"collineations":{"0":"E###D###A","1":"B###A","2":"C###A","3":"C###B","4":"B###D","5":"C###E"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleCongRelation {triangleA =△BAD, triangleB =△ACE}, Line parallel relation [iLine1 =BD, iLine2 =CE], ProveConclusionRelation: [证明: EqualityRelation {BD =DE + CE}], SolveGeoShapeConclusionRelation {IPolygon =△ABD, iPolygonType =SOLVEENCLOSESHAPE}

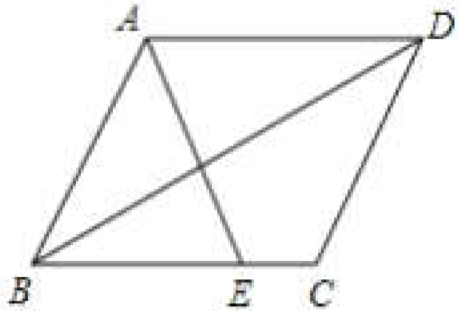
997, topic: FIG known \$ ∠A =32 ° \$, \$ ∠B =45 ° \$, \$ ∠C =38 ° \$, \$ ∠DFA \$ required degree.



graph:
{"stem":{"pictures":[{"picturename":"1000021352_Q_1.jpg","coordinates":{"A":"-6.61,5.95","B":"-7.00,0.00","C":"1.00,0.00","D":"-3.49,3.51","E":"-4.45,0.00","F":"-5.13,1.87"},"collineations":{"0":"A###D###C","1":"A###E###F","2":"D###F###B","3":"B###E###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: EqualityRelation {∠DAF =(8/45 * Pi)}, EqualityRelation {∠EBF =(1/4 * Pi)}, EqualityRelation {∠DCE =(19/90 * Pi)}, find the size of the angle: AngleRelation {angle =∠AFD}, SolutionConclusionRelation {relation =evaluator (size) :(ExpressRelation: [key:] ∠AFD)}

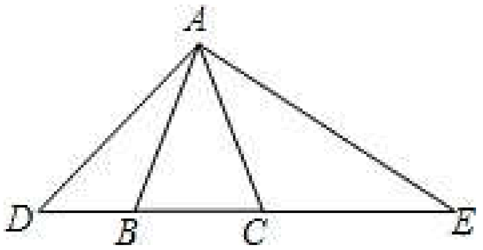
998, topic: As shown in □ABCD, E is a little edge BC, the connection AE, BD and AE =AB #% # (1) Prove:. ∠ABE =∠EAD; #% # (2) if ∠AEB =2∠ADB, Proof: a diamond quadrangle ABCD #% # <img>



graph:
{"stem":{"pictures":[{"picturename":"1000041781_Q_1.jpg","coordinates":{"A":"-12.00,19.00","B":"-13.16,16.00","C":"-9.94,16.00","D":"-8.78,19.00","E":"-10.84,16.00"},"collineations":{"0":"A###B","1":"A###D","2":"A###E","3":"B###E###C","4":"D###B","5":"D###C"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: ParallelogramRelation{parallelogram=Parallelogram:ABCD},PointOnLineRelation{point=E, line=BC, isConstant=false, extension=false},SegmentRelation:AE,SegmentRelation:BD,EqualityRelation{AE=AB},EqualityRelation{∠AEB=2*∠ADB},ProveConclusionRelation:[Proof: EqualityRelation{∠ABE=∠DAE}],ProveConclusionRelation:[Proof: RhombusRelation{rhombus=Rhombus:ABCD}]

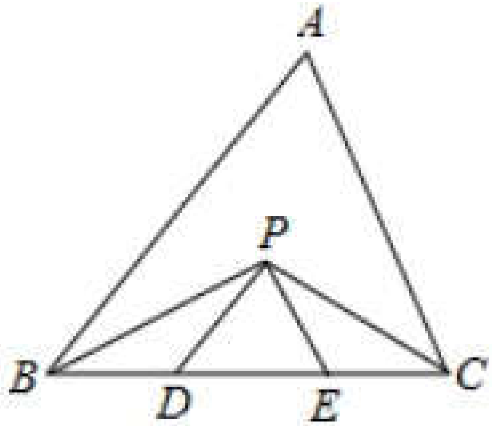
999, topic: Given: As shown in $ \ vartriangle ABC $ in, $ AB =AC $, $ D $ of $ $ extension line CB that is $ E $ $ $ extension line of the BC bit, and satisfying $ {{AB} ^ {2}} =DB \ cdot CE $ Proof: $ \ vartriangle ADB \ sim \ vartriangle EAC $.



graph:
{"stem":{"pictures":[{"picturename":"1000005821_Q_1.jpg","coordinates":{"A":"-6.96,5.66","B":"-8.52,1.98","C":"-5.51,1.94","D":"-10.52,1.98","E":"2.50,1.84"},"collineations":{"0":"B###A","1":"A###D","2":"A###C","3":"A###E","4":"D###B###C###E"},"variable-equals":{},"circles":[]}],"appliedproblems":{}},"substems":[]}

NLP: TriangleRelation:△ABC,EqualityRelation{AB=AC},PointOnLineRelation{point=D, line=CB, isConstant=false, extension=true},PointOnLineRelation{point=E, line=BC, isConstant=false, extension=true},EqualityRelation{((AB)^2)=BD*CE},ProveConclusionRelation:[Proof: TriangleSimilarRelation{triangleA=△ADB, triangleB=△EAC}]

1000, topic: As shown in the △ABC, $ BC =5 $ cm, BP, CP and are bisector of∠ABC and ∠ACB, and PD∥AB, PE∥AC, points D, E on the sides BC . △PDE seeking the perimeter is how much cm? <img>



graph:
[{"circles":[],"variable-equals":{},"picturename":"1000002899_Q_1.jpg","collineations":{"3":"P###C","2":"P###B","1":"A###C","0":"A###B","6":"B###D###E###C","5":"P###E","4":"P###D"},"coordinates":{"D":"-3.20,-2.00","E":"-1.20,-2.03","P":"-1.75,-0.20","A":"-1.01,3.65","B":"-5.50,-1.96","C":"0.71,-2.06"}}]

NLP:
EqualityRelation{C_△DEP=v_0},TriangleRelation:△ABC,EqualityRelation{BC=5},AngleBisectorRelation{line=BP,angle=∠ABD, angle1=∠ABP, angle2=∠DBP},AngleBisectorRelation{line=CP,angle=∠ACE, angle1=∠ACP, angle2=∠ECP},LineParallelRelation [iLine1=PD, iLine2=AB],LineParallelRelation [iLine1=PE, iLine2=AC],PointOnLineRelation{point=D, line=BC, isConstant=false, extension=false},PointOnLineRelation{point=E, line=BC, isConstant=false, extension=false},Calculation:(ExpressRelation:[key:]v_0),SolutionConclusionRelation{relation=Calculation:(ExpressRelation:[key:]C_△DEP)}