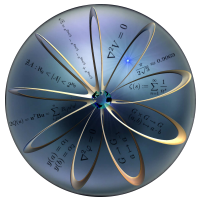

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high school mathematics

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Related topic	IndexOfEntriesOnCompassAndStraightedgeConstructions

The aim of this meta entry is to index entries suitable for high school students.

Basics

1. set, union, intersection
2. natural numbers, rational numbers, real numbers
3. associativity of multiplication
4. product of negative numbers
5. equation, inequality
6. proportion equation, proportionality of numbers
7. per cent
8. mathematical induction
9. proof by contradiction
10. converse
11. contrapositive

Algebra

1. opposite number, difference
2. inverse number, division
3. multiple, product
4. entries on rational numbers
5. irrational numbers
6. factorization of integers
7. linear equation
8. square of sum

9. difference of squares
10. grouping method for factoring polynomials
11. factoring a sum or difference of two cubes
12. zero rule of product
13. `http://planetmath.org/ConjugationMnemonic`conjugation
14. even-even-odd rule
15. completing the square
16. square roots of rationals
17. quadratic formula
18. quadratic inequality
19. strange root
20. inequality with absolute values
21. absolute value inequalities
22. long division of polynomials

Geometry

1. basic geometric figures:
    - points
    - lines
    - planes
    - line segments
    - rays
    - angles
    - triangles
    - parallelograms

- rectangles
- trapezoids
- polygons
- regular polygons
- base and height of triangle
- circles
- parts of a ball
- cylinder
- solid cone

2. basic geometric properties:
   - intersections
   - `http://planetmath.org/Betweenness`between
   - endpoints
   - `http://planetmath.org/Midpoint`midpoints
   - parallelism
   - perpendicularity
   - `http://planetmath.org/Congruence`congruence
   - similarity
   - similar triangles
   - tangent of circle
3. acute angles, convex angles, radian
4. complementary angles, supplementary angles, explementary angles
5. angle between two lines, angle of view
6. projection of point
7. locus
8. normal line, angle bisector, angle bisector as locus, center normal as locus

9. measurements (lengths, areas, and volumes) of basic geometric figures
10. compass and straightedge constructions:
    - http://planetmath.org/Midpointmidpoint
    - perpendicular bisector
    - dropping the perpendicular from a point to a line
    - erecting the perpendicular to a line at a point
    - http://planetmath.org/CompassAndStraightedgeConstructionOfAngleBisectorar bisector
    - http://planetmath.org/CompassAndStraightedgeConstructionOfRegularTriangle triangle
    - http://planetmath.org/CompassAndStraightedgeConstructionOfDuplicatingAnAr an angle
    - http://planetmath.org/CompassAndStraightedgeConstructionOfCenterOfGivenCi of a circle
    - construction of tangent
    - http://planetmath.org/Circumcentercircle passing through three noncollinear points
    - http://planetmath.org/CompassAndStraightedgeConstructionOfParallelLinepar line
    - http://planetmath.org/CompassAndStraightedgeConstructionOfSquaresquare
    - http://planetmath.org/NSectionOfLineSegmentWithCompassAndStraightedge$n$-section of line segment
    - circle with given center and given radius
    - http://planetmath.org/CompassAndStraightedgeConstructionOfSimilarTriangle triangles
    - http://planetmath.org/CompassAndStraightedgeConstructionOfGeometricMeange mean
    - http://planetmath.org/ConstructionOfCentralProportioncentral proportional
    - http://planetmath.org/CompassAndStraightedgeConstructionOfInversePointinv point with respect to a circle

- http://planetmath.org/CompassAndStraightedgeConstructionOfRegularPentagon pentagon
- http://planetmath.org/ConstructionOfRegular2nGonFromRegularNGonconstruction of regular $2n$-gon from regular n-gon

11. trisection of angle
12. axiomatic proofs in geometry:
    - angles of an isosceles triangle
    - determining from angles that a triangle is isosceles
    - isosceles triangle theorem
    - converse of isosceles triangle theorem
    - parallelogram theorems
    - regular polygon and circles
    - Pythagorean theorem and its various proofs:
      - http://planetmath.org/ProofOfPythagoreasTheoremusing four congruent triangles and a square
      - http://planetmath.org/ProofOfPythagoreanTheoremdropping altitude to form three similar triangles
      - http://planetmath.org/GarfieldsProofOfPythagoreanTheoremGarfield's proof
      - http://planetmath.org/ProofOfPythagoreanTheorem2two dissections of a square with side $a + b$
    - construct the center of a given circle
    - Thales' theorem and its http://planetmath.org/ProofOfThalesTheoremproof
    - opposing angles in a cyclic quadrilateral are supplementary
    - mid-segment theorem

Analytic geometry

1. analytic geometry
2. Cartesian coordinates

3. coordinates of midpoint
4. slope
5. tangent line
6. condition of orthogonality
7. `http://planetmath.org/AngleBetweenTwoLines`angle between two lines
8. conics (ellipse, hyperbola, parabola)
9. polar coordinates

Vectors and Matrices

1. sum of vectors (i.e. parallelogram principle), difference of vectors
2. Euclidean vectors
3. mutual positions of vectors
4. scalar product
5. matrices, addition and multiplication of matrices

Trigonometry

1. right triangle
2. regular triangle
3. isosceles triangle
4. altitudes
5. bisectors
6. ASA, SSS, SAS, SSA (triangle solving)
7. exact trigonometry tables
8. sohcahtoa

9. determining signs of trigonometric functions
10. addition formulas for sine and cosine
11. addition formula for tangent
12. goniometric formulae
13. trigonometric equation

Functions

1. definitions and operations of functions
2. argument
3. polynomial functions (including linear functions)
4. rational functions
5. functions involving
6. exponential functions
7. Briggsian logarithms
8. trigonometric functions
9. limit of real number sequence
10. geometric sequence
11. sequences and series

Differential calculus

1. concept of a limit
2. limit rules of functions, improper limit
3. continuous
4. `http://planetmath.org/LimitOfDisplaystyleFracsinXxAsXApproaches0`limit of sine divided by angle at 0

5. intermediate value theorem
6. derivative
7. derivatives of sine and cosine
8. derivative of inverse function
9. related rates
10. minimum and maximum of functions (extrema)
11. least and greatest value of function
12. mean value theorem
13. Rolle's theorem

Integral calculus

1. Riemann sum
2. integral
3. left hand rule
4. right hand rule
5. midpoint rule
6. `http://planetmath.org/CompositeTrapezoidalRule`trapezoid rule
7. fundamental theorem of calculus
8. integration techniques

Complex numbers

1. complex numbers
2. complex function

Applications (word problems)

1. graphing of equations and inequalities
2. counting and basic probability
3. length, area, volume
4. distance, rate, speed, velocity
5. money, interest, compound interest