Hybleland L9-Lesson 09 Coordinate Geometry III-Circle and Graph-Assignment

Practice 1.

Two circles of radius 2 are centered at (2,0) and at (0,2). A point (x,y) is randomly picked from the union of the two circles. What is the probability that the point is inside the are of the intersection of the two circles?
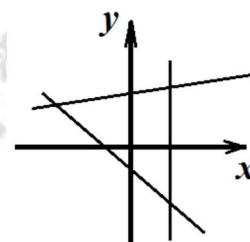
$(A)1/12$ $(B)1/8$ $(C)3/16$ $(D)1/9$ $(E)1/11$

Practice 2.

The vertices of a triangle are the points of intersection of the lines $y = -x - 1$,

$x = 2$, and $y = \dfrac{1}{5}x + \dfrac{13}{5}$. Find an equation of the circle passing through all three vertices.

$(A)x^2 + y^2 = 13$ $(B)x^2 + y^2 = 169$ $(C)x^2 + y^2 = 16$

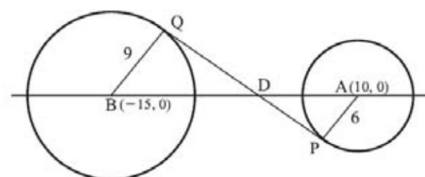$(D)x^2 + y^2 = 15$ $(E)x^2 + y^2 = 7$

Practice 3.

(AMC) Let C_1 and C_2 be circles defined by $(x-10)^2 + y^2 = 36$ and $(x+15)^2 + y^2 = 81$,

respectively. What is the length of the shortest line segment PQ that is tangent to C_1 at P and to

C_2 at Q?

$(A)15$ $(B)18$ $(C)20$ $(D)21$ $(E)24$

Practice 4.

A point (x,y) is randomly picked from inside the circle with center (3,3) and radius 3. What is the probability that $x < y - 3$? You can use 3 for π.

$(A)1/12 \qquad (B)1/8 \qquad (C)3/16 \qquad (D)1/9 \qquad (E)2/27$

Practice 5.

AMC10A 2006 / Problem 11

Which of the following describes the graph of the equation $(x + y)^2 = x^2 + y^2$?

A. the empty set B. one point C. two lines D. a circle E. the entire plane

Practice 6.

AMC10A 2011 / Problem 9

A rectangular region is bounded by the graphs of the equations $y = a, y = -b, x = -c,$ and $x = d$, where $a, b, c,$ and d are all positive numbers. Which of the following represents the area of this region?

A. $ac + ad + bc + bd$ B. $ac - ad + bc - bd$ C. $ac + ad - bc - bd$
D. $-ac - ad + bc + bd$ E. $ac - ad - bc + bd$

Practice 7.

AMC10A 2017 / Problem 12

Let S be the set of points (x, y) in the coordinate plane such that two of the three quantities 3, $x + 2$, and $y - 4$ are equal and the third of the three quantities is no greater than this common value. Which of the following is a correct description of S?

A. a single point   B.   two intersecting lines
C.   three lines whose pairwise intersections are three distinct points   D.   a triangle
E.   three rays with a common endpoint

Practice 8.

AMC10B 2016 / Problem 9

All three vertices of $\triangle ABC$ lie on the parabola defined by $y = x^2$, with A at the origin and $\overline{BC}$ parallel to the x-axis. The area of the triangle is 64. What is the length of BC?

A. 4 B. 6 C. 8 D. 10 E. 16

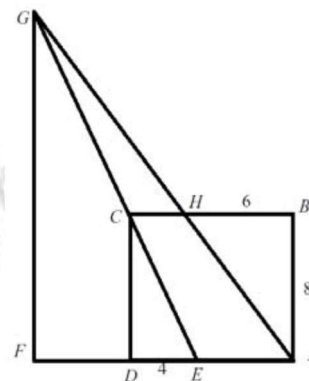**Practice 9.**

AMC10B 2016 / Problem 14

How many squares whose sides are parallel to the axes and whose vertices have coordinates that are integers lie entirely within the region bounded by the line $y = \pi x$, the line $y = -0.1$ and the line $x = 5.1$?

A. 30 B. 41 C. 45 D. 50 E. 57

Practice 10.

In rectangle ABCD, we have AB=8, BC=9, H is on BC with BH=6, E is on AD with DE=4, line EC intersects line AH at G, and F is on line AD with GF? What is the length EF?

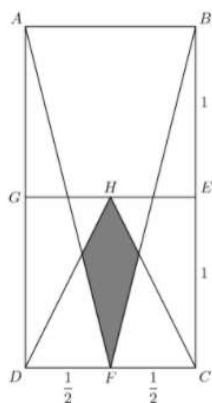$(A)6$ $(B)10$ $(C)14$ $(D)15$ $(E)12$

Practice 11.

AMC10A 2014 / Problem 16

In rectangle $ABCD$, $AB = 1$, $BC = 2$, and points E, F, and G are midpoints of $\overline{BC}$, $\overline{CD}$, and $\overline{AD}$, respectively. Point H is the midpoint of $\overline{GE}$. What is the area of the shaded region?

A. $\frac{1}{12}$ B. $\frac{\sqrt{3}}{18}$ C. $\frac{\sqrt{2}}{12}$ D. $\frac{\sqrt{3}}{12}$ E. $\frac{1}{6}$