Name: _____ Class: _____ Date: _____ ID: A

Geometry Unit 6 (Non-Calculator): Trigonometry, Equations of Circles, Unit Circle and Transformations

Multiple Choice
Identify the letter of the choice that best completes the statement or answers the question.

1. If $\sin\theta = \frac{\sqrt{3}}{2}$ and θ terminates in the first quadrant, then what is $\tan\theta$?

   A. $\frac{\sqrt{3}}{3}$

   B. $\sqrt{3}$

   C. $\frac{\sqrt{2}}{2}$

   D. $\frac{1}{2}$

   E. 1

2. A circle is centered at (4, -1) and has a diameter of 6 units. If this circle is translated 1 unit to the left, what is the equation of the new circle?

   A. $(x-5)^2 + (y+1)^2 = 9$

   B. $(x-3)^2 + (y+1)^2 = 36$

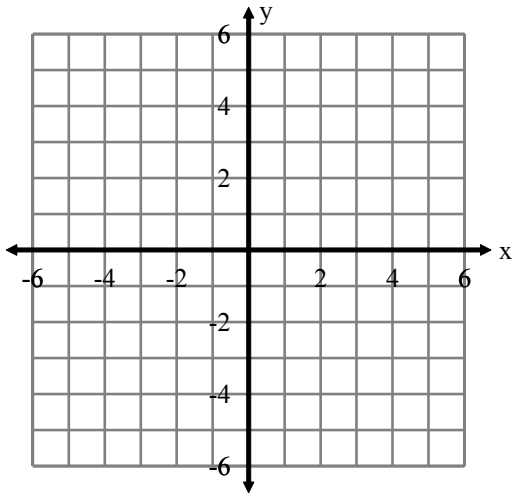
   C. $(x+5)^2 + (y-1)^2 = 9$

   D. $(x+3)^2 + (y-1)^2 = 36$

   E. $(x-3)^2 + (y+1)^2 = 9$

Test # 009060

3. The point A is located at (-2, 3) and the point B is located at (1, 0). What are the coordinates of the points A″ and B″ if $\overline{AB}$ is first reflected over the line $y = x$ to produce the image $\overline{A'B'}$ and then rotated about the origin counterclockwise 90° to produce the image $\overline{A''B''}$?



A. $A'' = (3,-2)$ $B'' = (1,0)$

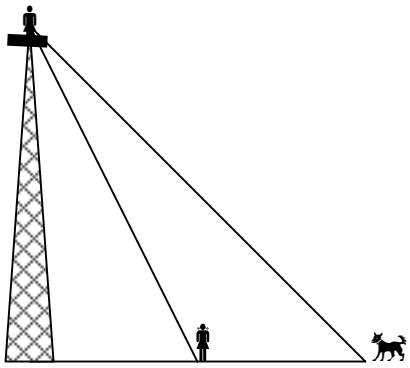
B. $A'' = (-3,2)$ $B'' = (-1,0)$

C. $A'' = (2,3)$ $B'' = (-1,0)$

D. $A'' = (3,2)$ $B'' = (-1,0)$

E. $A'' = (-2,3)$ $B'' = (1,0)$

4. From the observation deck at the top of a tower that is 30 meters tall, Marissa is looking down at a girl and her lost dog. The positions of the center of the base of the tower, the girl, and the dog are collinear. If the angle of depression from Marissa to the girl is 60°, and the angle of depression from Marissa to the dog is 30°, then how far apart are the girl and her dog?



A. $\frac{30\sqrt{3}}{3}$ m

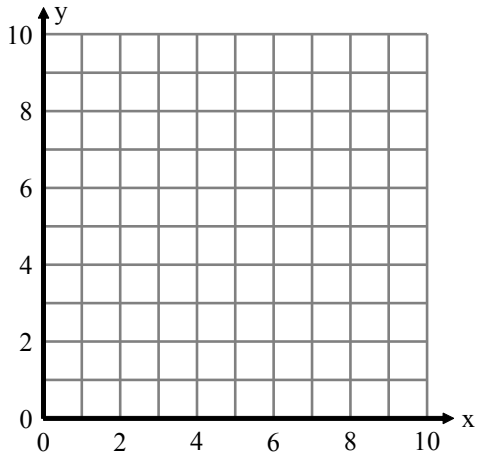
B. $20\sqrt{2}$ m

C. $20\sqrt{3}$ m

D. $30\sqrt{2}$ m

E. $30\sqrt{3}$ m

5. In equilateral ΔABC point A is located at (1, 0), point B is located at (5, 0), and point C is located in the first quadrant. What are the coordinates for C' in $\Delta A'B'C'$ after a dilation with scale factor of 2 from the origin?



A. $\left(6, 4\sqrt{2}\right)$

B. (4, 4)

C. (6, 4)

D. $\left(4, 4\sqrt{3}\right)$

E. $\left(6, 4\sqrt{3}\right)$

6. If $\sin \angle A$ in ΔABC is $\frac{5}{13}$, and $m\angle C = 90°$, then what is the tangent of $\angle B$?

A. $\frac{5}{12}$

B. $\frac{12}{5}$

C. $\frac{12}{13}$

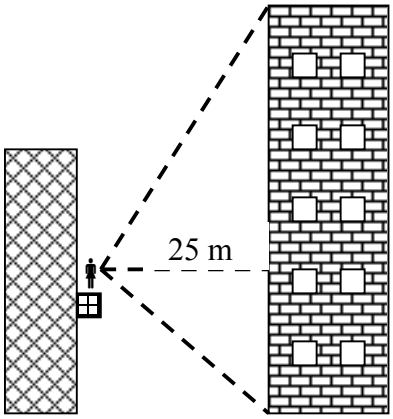
D. $\frac{13}{12}$

E. $\frac{13}{5}$

Geometry Unit 6 (Calculator): Trigonometry, Equations of Circles, Unit Circle and Transformations

Multiple Choice
Identify the letter of the choice that best completes the statement or answers the question.

7. Janice is standing on a balcony of an apartment building looking across the street at a bank building that is 25 meters away. The angle of elevation from Janice to the top of the bank building is 58° and the angle of depression from Janice to the bottom of the bank building is 34°. How tall is the bank building?



A. 33.974 m

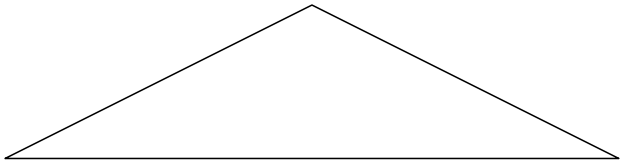
B. 35.181 m

C. 40.008 m

D. 56.871 m

E. 74.187 m

8. In a given isosceles triangle, the vertex angle measures 150°. If the base of the triangle is 17 cm, then what is the perimeter of the triangle?



A. 34.600 cm

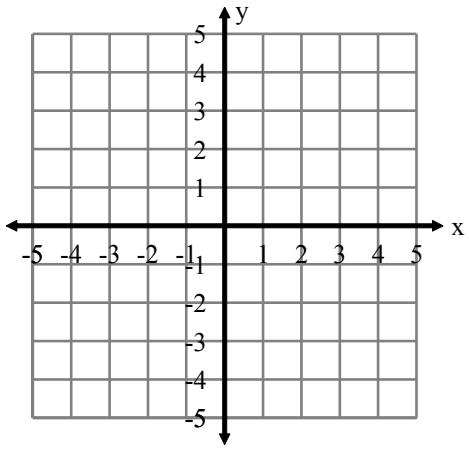
B. 36.630 cm

C. 46.444 cm

D. 51.000 cm

E. 82.683 cm

9. The diagonal of a square is formed by connecting the points $A(0, 0)$ and $B(4, 0)$. If the square is rotated 45° counterclockwise about point A, what is the y-coordinate for B' in the rotated image $\overline{A'B'}$?



A. 2.309

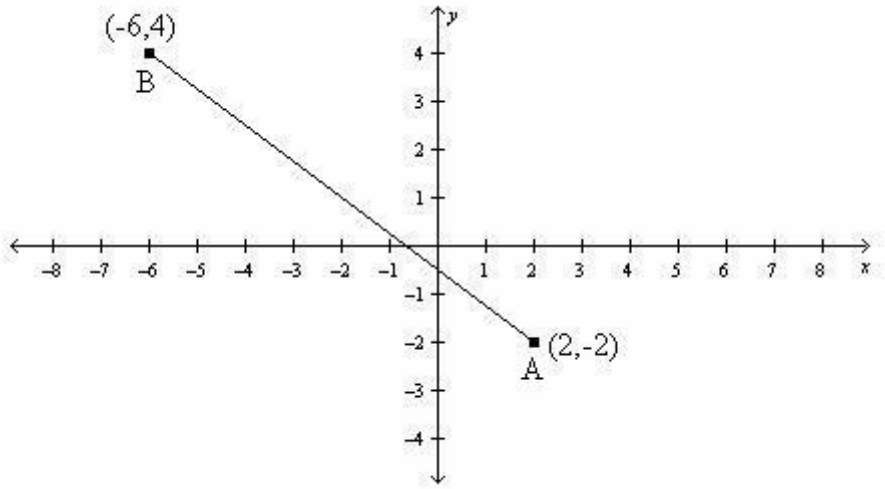
B. 2.828

C. 3.414

D. 4.000

E. 6.828

Line segment $\overline{AB}$ is show on the grid below.



(a) Given A(2, -2) and B(-6, 4), then what is the midpoint of $\overline{AB}$? What is the length AB?

(b) If $\overline{AB}$ is the diameter of circle *M*, then write an equation for circle *M*.

(c) Point C is located on circle *M* in the first quadrant such that AC and BC are 6 and 8 respectively. What are the measures of the acute angles in ΔABC? Show the equations used to determine the angle measures.

(d) Find two points on the *y*-axis that lie on circle *M*. Show the setup that leads to the answers.