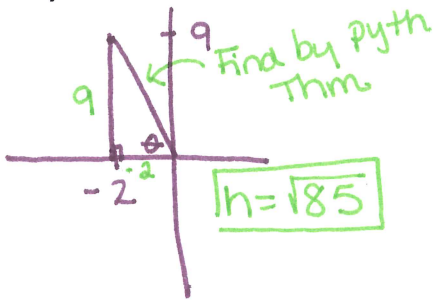


Name: Key

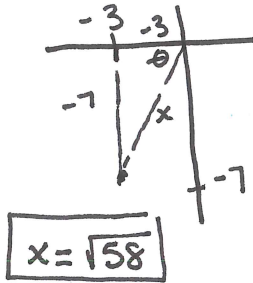
Special Right Triangles and Trig Ratios Notes 2016-2017

Warm-Up: Draw in a right triangle, label the side length, and find the hypotenuse using the points provided and the reference angle.

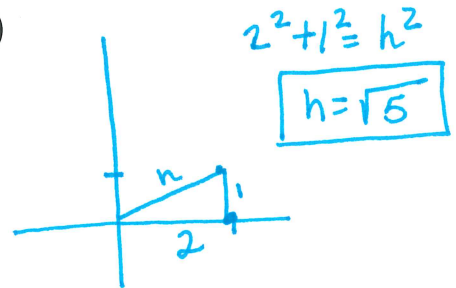
A. (-2,9)



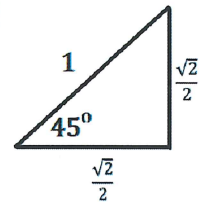
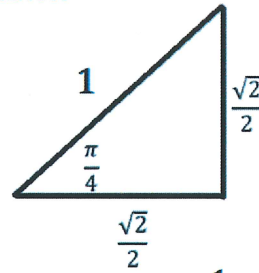
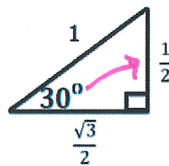
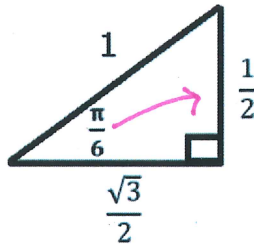
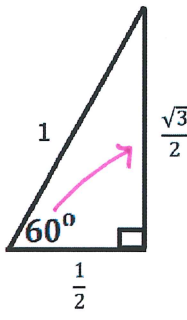
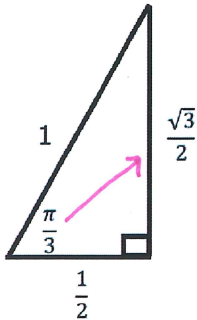
B. (-3,-7)



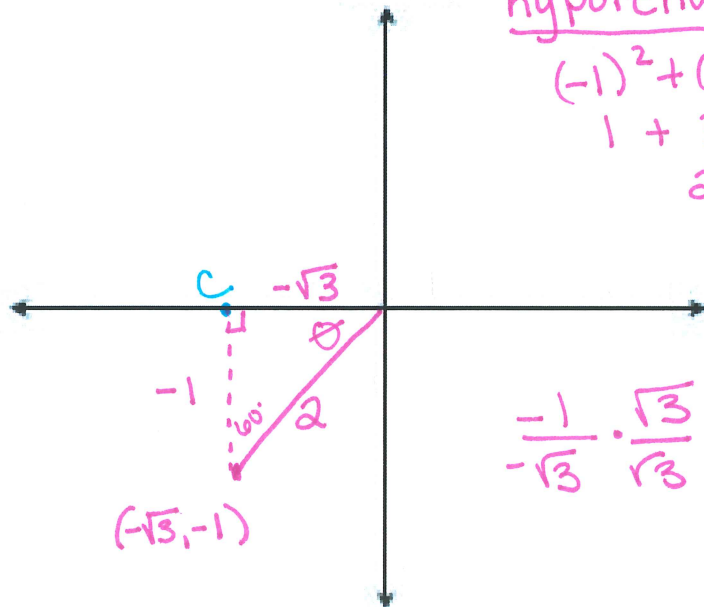
C. (2,1)



Directions: Graph the point, label the lengths of the right triangle with right angle C, find the length of the hypotenuse, the reference angle in radians, and the exact trig ratio value. Simplify all radicals, simplify all fractions and make sure there is no radical in the denominator.



1. $(-\sqrt{3}, -1)$ **Quad III**



hypotenuse
 $(-1)^2 + (-\sqrt{3})^2 = h^2$
 $1 + 3 = h^2 \quad 4 = h^2$
 $2 = h$

$$\frac{-1}{-\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = \frac{\sqrt{3}}{3}$$

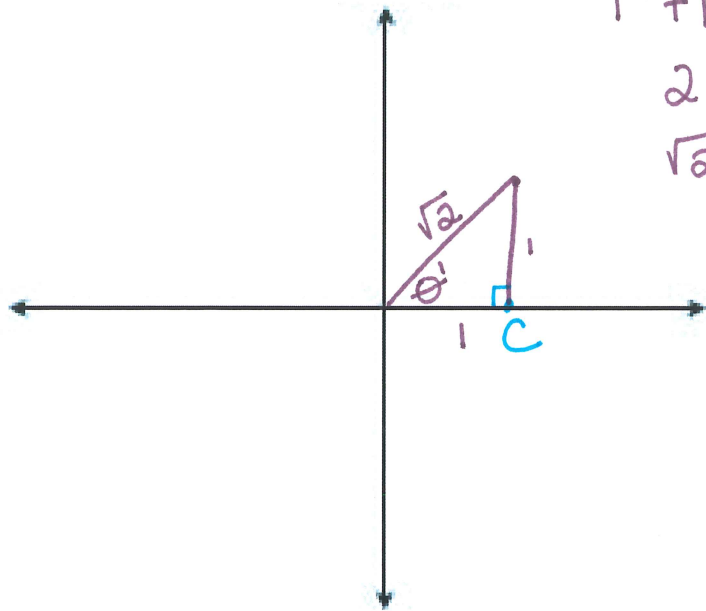
$$\theta' = 30^\circ = \frac{\pi}{6}$$

$$\sin \theta' = \frac{-1}{2}$$

$$\cos \theta' = \frac{-\sqrt{3}}{2}$$

$$\tan \theta' = \frac{-1}{-\sqrt{3}} = \frac{\sqrt{3}}{3}$$

2. (1,1)



$$1^2 + 1^2 = h^2$$

$$2 = h^2$$

$$\sqrt{2} = h$$

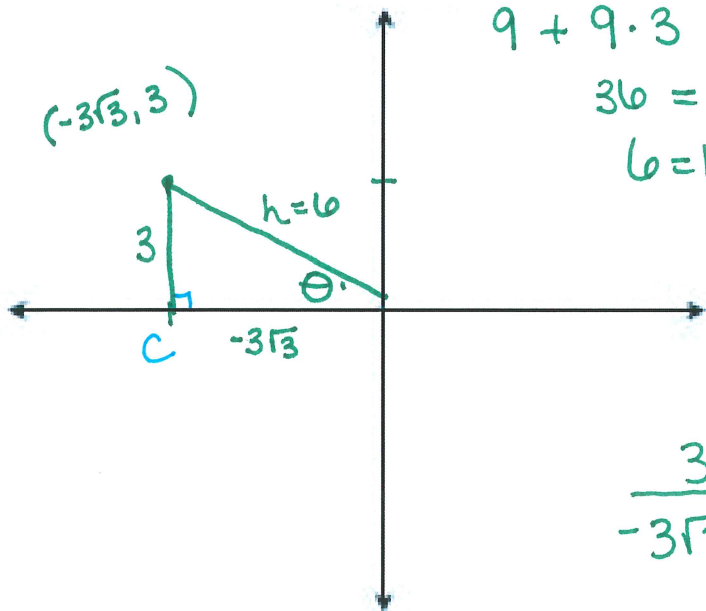
$$\theta' = \frac{\pi}{4}$$

$$\sin \theta' = \frac{1}{\sqrt{2}} = \frac{\sqrt{2}}{2}$$

$$\cos \theta' = \frac{1}{\sqrt{2}} = \frac{\sqrt{2}}{2}$$

$$\tan \theta' = \frac{1}{1} = 1$$

3. $(-3\sqrt{3}, 3)$



Ahhh!

$$3^2 + (-3\sqrt{3})^2 = h^2$$

$$9 + 9 \cdot 3 = h^2$$

$$36 = h^2$$

$$6 = h$$

$$\theta' = \frac{\pi}{6}$$

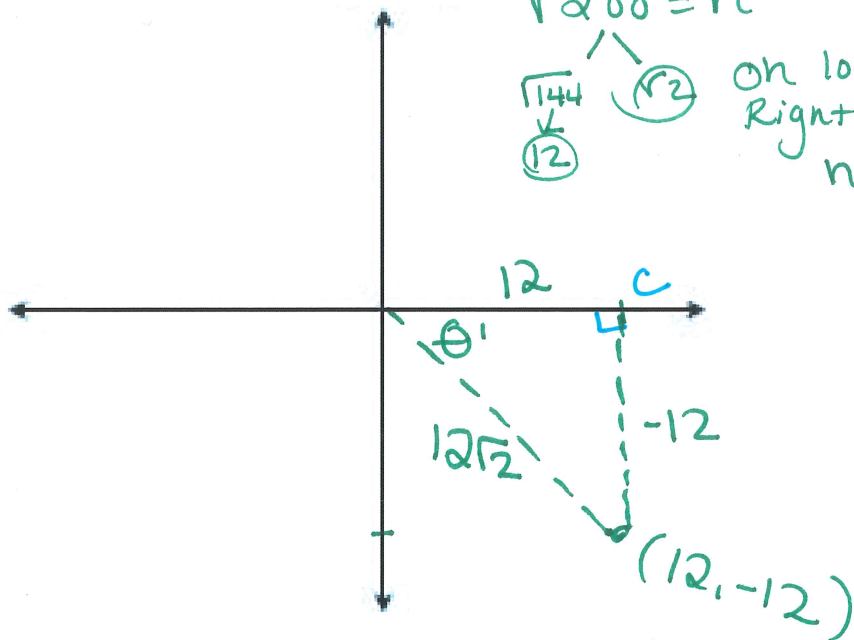
$$\sin \theta' = \frac{3}{6} = \frac{1}{2}$$

$$\cos \theta' = \frac{-3\sqrt{3}}{6} = -\frac{\sqrt{3}}{2}$$

$$\tan \theta' = \frac{3}{-3\sqrt{3}} = -\frac{\sqrt{3}}{3}$$

$$\frac{3}{-3\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = \frac{-3\sqrt{3}}{3 \cdot 3} = \frac{-3\sqrt{3}}{9} = -\frac{\sqrt{3}}{3}$$

4. $(12, -12)$

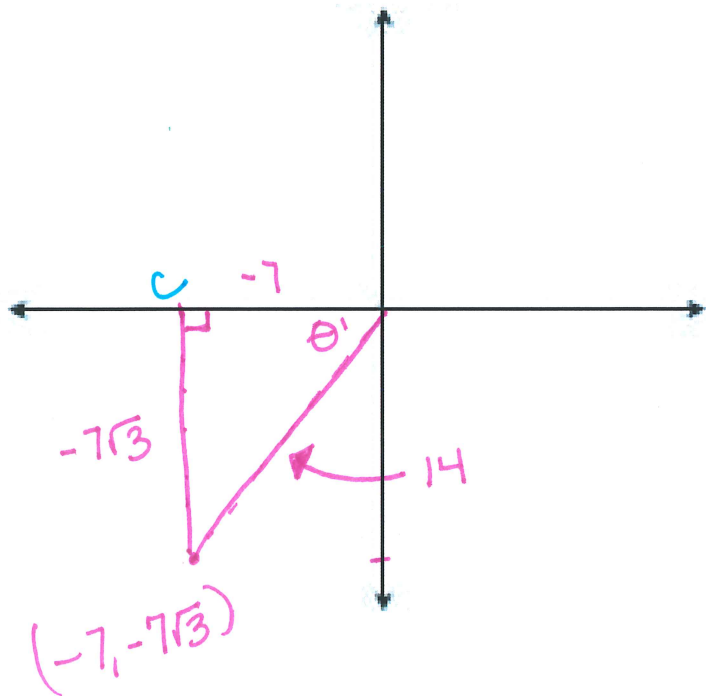


$$\theta' = \frac{\pi/4}{\quad}$$
$$\sin \theta' = \frac{-12}{12\sqrt{2}} = -\frac{\sqrt{2}}{2}$$

$$\cos \theta' = \frac{12}{12\sqrt{2}} = \frac{\sqrt{2}}{2}$$

$$\tan \theta' = \frac{-12}{12} = -1$$

5. $(-7, -7\sqrt{3})$



$$\theta' = \frac{\pi/3}{\quad}$$

$$\sin \theta' = \frac{-7\sqrt{3}}{14} = -\frac{\sqrt{3}}{2}$$

$$\cos \theta' = \frac{-7}{14} = -\frac{1}{2}$$

$$\tan \theta' = \frac{-7\sqrt{3}}{-7} = \sqrt{3}$$