

BLC 190

Name: _____

Homework 4

1. Use the unit circle to evaluate the following trigonometric functions. Give exact answers.

(a) $\cos\left(\frac{3\pi}{4}\right)$

(d) $\sin\left(\frac{3\pi}{2}\right)$

(b) $\tan\left(\frac{7\pi}{6}\right)$

(e) $\csc\left(\frac{11\pi}{6}\right)$

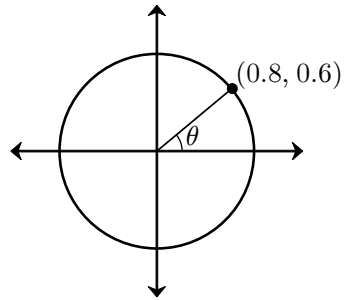
(c) $\sin\left(\frac{11\pi}{3}\right)$

(f) $\cos\left(\frac{13\pi}{6}\right)$

2. If $\sin \theta = \frac{\sqrt{3}}{2}$, what are the possible values for θ ? Use the unit circle, and give the exact answers.

3. If $\sec \theta = 2$, what are the possible values for θ ? Use the unit circle, and give the exact answers.

4. The following circle has radius 1 and is centered at the origin:

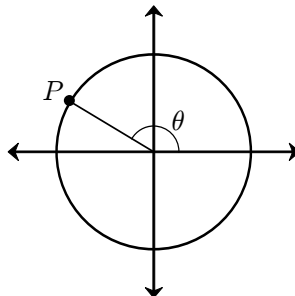


(a) What is $\cos \theta$?

(b) What is $\sin \theta$?

(c) What is $\tan \theta$?

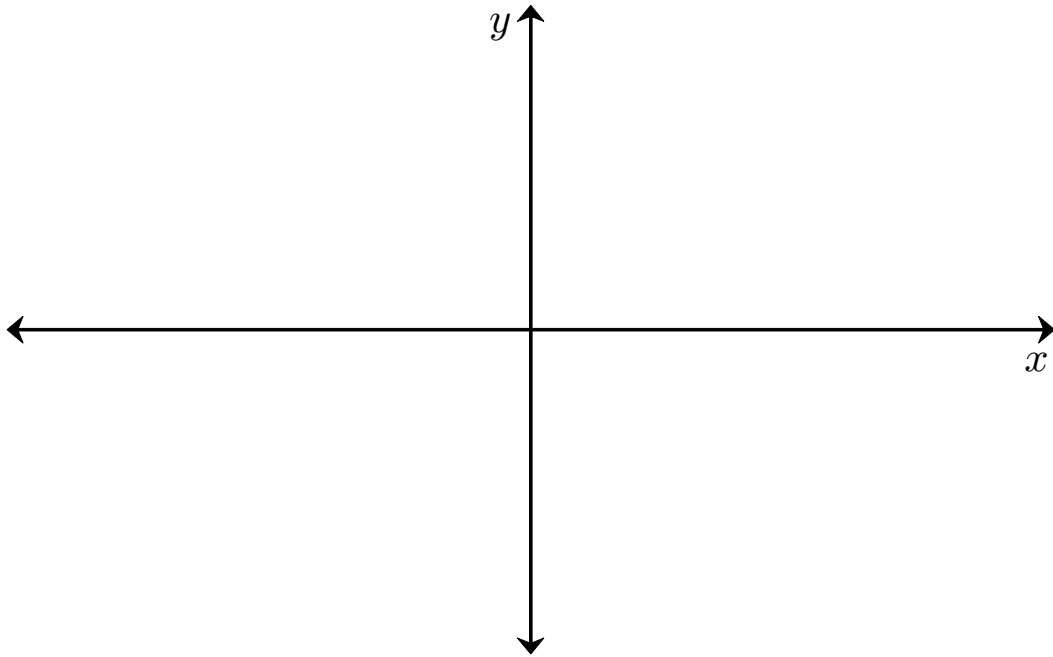
5. The following circle has radius 1 and is centered at the origin:



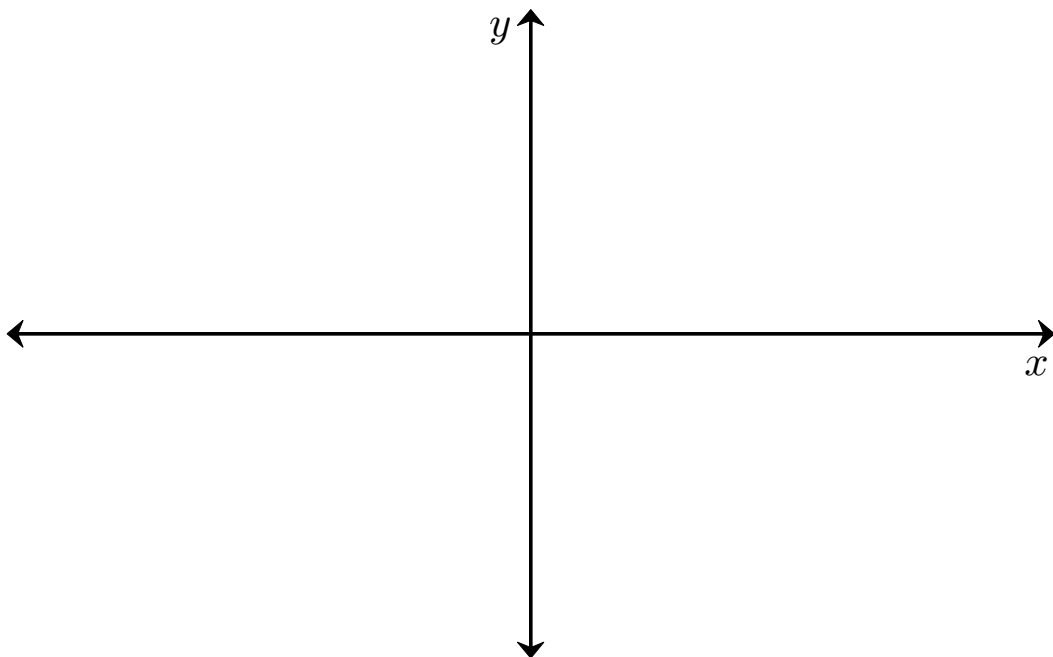
If the x -coordinate of the point P is -0.5 , what is $\sin \theta$?

6. Sketch the graphs of the following functions:

(a) $y = 3 \sin x - 1$



(b) $y = \cos(3x)$



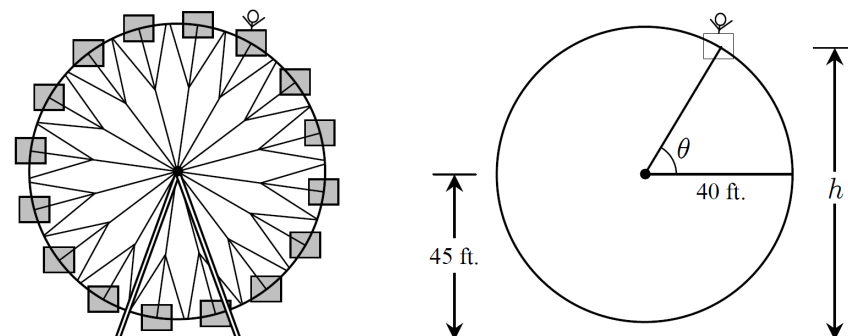
7. Find all solutions to the following equations. Give the exact answers in radians.

(a) $2 \cos \theta - 1 = 0$

(b) $2 \csc \theta - 1 = 3$

(c) $4 \cos^2 \theta - 2 = 1$

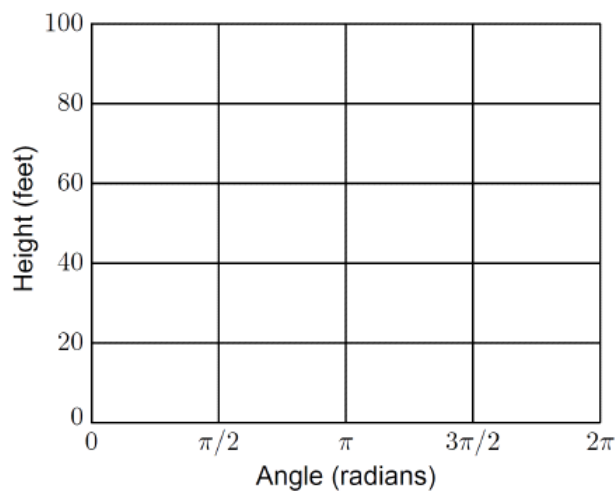
8. Little Joey is riding a ferris wheel at an amusement park:



The wheel has a radius of 40 feet, and the center of the wheel sits 45 feet off the ground. Let h represent Joey's height above the ground, and let θ be the measure of the angle shown in the picture.

(a) Determine the values for h for $\theta = 0^\circ$, $\theta = 90^\circ$, $\theta = 180^\circ$, and $\theta = 270^\circ$.

(b) Sketch a graph of h as a function of θ .



(c) Find a formula for h as a function of θ . Make sure your formula agrees with your answers to parts (a) and (b).