

1. Tangent can be defined as $\tan\theta = \frac{\sin\theta}{\cos\theta}$. Solve for $\sin\theta$.

2. Given that $\sin\theta = -\frac{2}{3}$ where $\pi \leq \theta \leq \frac{3\pi}{2}$ determine the following:

Use the Pythagorean identity $\sin^2\theta + \cos^2\theta = 1$ to find:

A. the value of $\cos\theta$.

B. the value of $\tan\theta$

3. Use the unit circle from problem number 7 to answer: Given the point P , with the coordinates $\left(-\frac{1}{2}, \frac{\sqrt{3}}{2}\right)$ on the unit circle, determine *sine* θ , *cosine* θ , and θ .

$\sin\theta$: _____

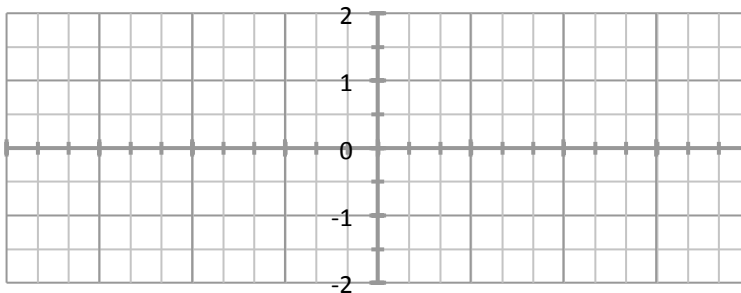
$\cos\theta$: _____

θ : _____

4. Let $f(x) = \sin x$ and $g(x) = -\sin(x + \pi) - 1$

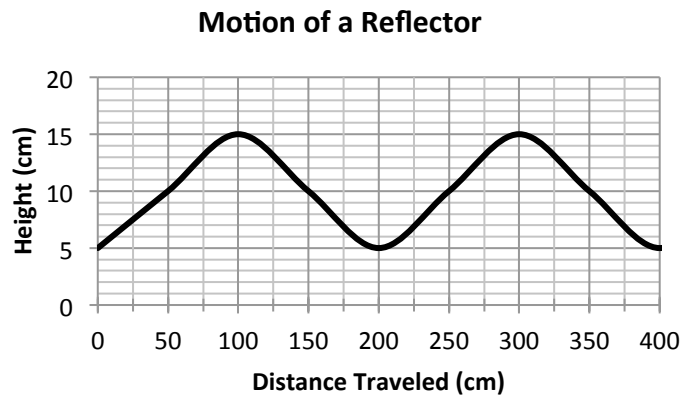
Describe the transformation from $f(x)$ to obtain the graph of $g(x)$.

5. Graph both $f(x)$ and $g(x)$ below:



6. What is the range of $f(x)$? What is the range of $g(x)$?

A reflector is attached to the spokes of a wheel. When you spin the wheel forward at a constant speed, the following graph can be made to measure the distance the reflector travels on the wheel.



1. What is the amplitude of the motion of the reflector graph?
2. What is the midline of the motion of a reflector graph?
3. What is the period of the motion of a reflector graph?
4. When the wheel has traveled 850 centimeters what is the height of the reflector?
(explain your reasoning)
7. How many degrees are in $\frac{2\pi}{5}$ radians? Round your answer to the nearest hundredth.
8. Convert 80 degrees to radians.
9. Which is greater 99° or $\frac{\pi}{2}$ radians?

Complete the following problems. You may **NOT use a calculator on this portion of the test**. You must show your process/work to receive full credit.

1. Point B (1, 0) was rotated θ degrees counterclockwise to the point $(\frac{\sqrt{3}}{2}, -\frac{1}{2})$. Determine the following.

A. Angle θ in degrees

B. Angle θ in radians

C. The sine value of angle θ

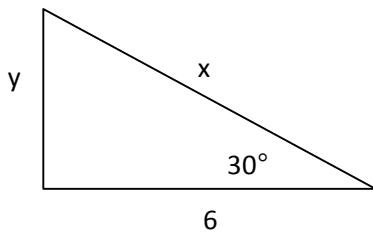
D. The cosine value of angle θ

E. The tangent value of angle θ

2. If θ is equal to $\frac{\pi}{6}$ what is the value of $\sin\theta$, $\cos\theta$, and $\tan\theta$?

3. If θ is equal to 120 degrees, what is $\sin\theta$, $\cos\theta$, and $\tan\theta$?

1. For the triangle shown below solve for x and y .



2. Find a positive and negative co-terminal angle to 125°.

3. Find a reference angle to 240°.