

## Math 26 Section 1

### Quiz 6

1. (3 points) Find the amplitude, period, and phase shift of

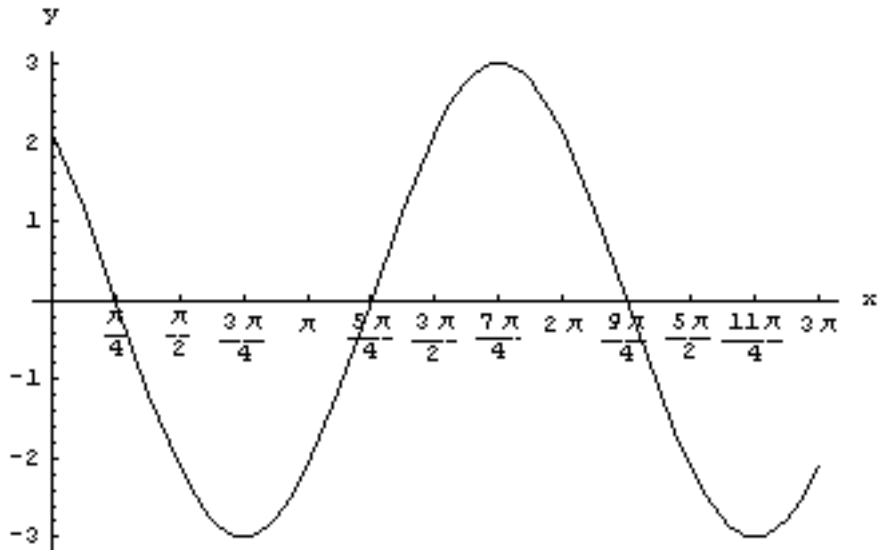
$$y = -\cos\left(2x - \frac{\pi}{2}\right)$$

$$\text{Amplitude} = \frac{1}{2} |M - m| = \frac{1}{2} |1 - (-1)| = 1$$

$$\text{Period} = \frac{2\pi}{B} = \frac{2\pi}{2} = \pi$$

$$\text{Phase Shift} = -\frac{C}{B} = -\frac{-\frac{\pi}{2}}{2} = \frac{\pi}{4}$$

2. (3 points) Find an equation for the graph below:



Viewing this as a sine function reflected about the x axis,

$$\text{Amplitude} = 3, \text{ Period} = 2\pi, \text{ Phase shift} = \frac{\pi}{4}$$

$$y = -3 \sin\left(x - \frac{\pi}{4}\right)$$

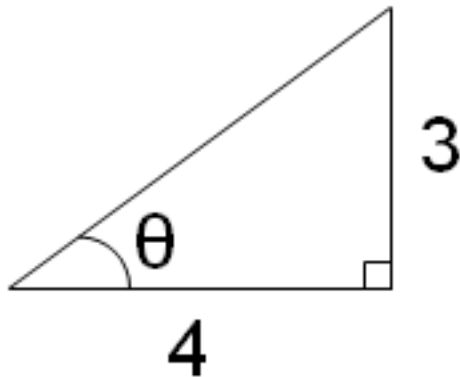
$$\text{Alternatively, } y = 3 \cos\left(x + \frac{\pi}{4}\right).$$

3. (2 points) Find  $\arctan\left(\frac{1}{\sqrt{3}}\right)$  in radians.

$$\tan \frac{\pi}{6} = \frac{1}{\sqrt{3}} \text{ and } -\frac{\pi}{2} < \frac{\pi}{6} < \frac{\pi}{2}, \text{ so } \arctan\left(\frac{1}{\sqrt{3}}\right) = \frac{\pi}{6}$$

4. (2 points) Evaluate  $\csc\left(\tan^{-1}\frac{3}{4}\right)$

Letting  $\theta = \tan^{-1}\frac{3}{4}$ , the information given in the problem yields the diagram:



From the Pythagorean theorem, the hypotenuse is  $\sqrt{4^2 + 3^2} = 5$ , so  $\csc \theta = \frac{\text{hyp}}{\text{opp}} = \frac{5}{3}$ .