

## Precalculus Chapter 6 Worksheet

### Graphing Sinusoidal Functions in Degree Mode

*Find the amplitude, period, phase (horizontal) displacement and translation (vertical displacement). Then use the information to find the critical points and sketch two cycles for the graph (one to the right and one to the left of the center point).*

1.  $y = 7 + 4 \cos 3(\theta - 10^\circ)$

Amplitude: \_\_\_\_\_

Period: \_\_\_\_\_

Phase: \_\_\_\_\_

Translation: \_\_\_\_\_

2.  $y = -10 + 20 \sin 2(\theta + 30^\circ)$

Amplitude: \_\_\_\_\_

Period: \_\_\_\_\_

Phase: \_\_\_\_\_

Translation: \_\_\_\_\_

3.  $y = 3 - 5 \cos \frac{1}{2}(\theta + 90^\circ)$

Amplitude: \_\_\_\_\_

Period: \_\_\_\_\_

Phase: \_\_\_\_\_

Translation: \_\_\_\_\_

4.  $1000 + 3000 \sin \frac{1}{3}(\theta + 60^\circ)$

Amplitude: \_\_\_\_\_

Period: \_\_\_\_\_

Phase: \_\_\_\_\_

Translation: \_\_\_\_\_

5.  $y = 11 - 6 \sin(\theta - 17^\circ)$

Amplitude: \_\_\_\_\_

Period: \_\_\_\_\_

Phase: \_\_\_\_\_

Translation: \_\_\_\_\_

## Precalculus Chapter 6 Worksheet

### Graphing Sinusoidal Functions in Radian Mode

Find the amplitude, period, phase (horizontal) displacement and translation (vertical displacement). Then use the information to find the critical points and sketch two cycles for the graph (one to the right and one to the left of the center point).

1.  $y = 3 + 2 \cos \frac{1}{5}(x - \pi)$

Amplitude: \_\_\_\_\_

Period: \_\_\_\_\_

Phase: \_\_\_\_\_

Translation: \_\_\_\_\_

2.  $y = -4 + 5 \sin \frac{2}{3}\left(x + \frac{\pi}{2}\right)$

Amplitude: \_\_\_\_\_

Period: \_\_\_\_\_

Phase: \_\_\_\_\_

Translation: \_\_\_\_\_

3.  $y = 2 - 6 \cos 3\left(x + \frac{\pi}{6}\right)$

Amplitude: \_\_\_\_\_

Period: \_\_\_\_\_

Phase: \_\_\_\_\_

Translation: \_\_\_\_\_

4.  $2 + 6 \sin \frac{\pi}{4}(x - 1)$

Amplitude: \_\_\_\_\_

Period: \_\_\_\_\_

Phase: \_\_\_\_\_

Translation: \_\_\_\_\_

5.  $y = -5 - 4 \sin \frac{\pi}{3}(x + 2)$

Amplitude: \_\_\_\_\_

Period: \_\_\_\_\_

Phase: \_\_\_\_\_

Translation: \_\_\_\_\_

## Graphing Tangent and Reciprocal Functions

Graph the following:

Assume the function is circular (use radians) if the independent variable is  $x$  and trigonometric (use degrees) if the independent variable is  $\theta$ . Graph two cycle of each.

1.  $y = \tan 2\theta$

9.  $y = 4 + 3 \tan \pi x$

2.  $y = \cot \frac{\pi}{3} x$

10.  $y = -5 + 3 \cot 4\theta$

3.  $y = \csc \frac{\pi}{2} x$

11.  $y = -6 + 2 \csc 5\theta$

4.  $y = \sec 3\theta$

12.  $y = 1 + 4 \sec \frac{\pi}{10} x$

5.  $y = 2 \cot x$

13.  $y = -1 + 3 \cot 2(\theta - 30^\circ)$

6.  $y = \frac{1}{2} \tan \theta$

14.  $y = 2 + 5 \tan \frac{\pi}{8} (x - 3)$

7.  $y = \frac{1}{3} \sec \theta$

15.  $y = 4 + 6 \sec \frac{\pi}{2} (x + 1)$

8.  $y = 2 \csc \theta$

16.  $-3 + 2 \csc 4(\theta + 10^\circ)$

Precalculus Worksheet  
Section 6.8

*Find the principal value to 2 decimal places for  $\theta$ , or 4 decimal places for  $x$ .*

1.  $\theta = \text{Sin}^{-1}0.195$
2.  $\theta = \text{Cos}^{-1}(-0.2843)$
3.  $x = \text{Cos}^{-1}0.845$
4.  $x = \text{Sin}^{-1}(-0.97)$

*Find the principal value to 2 decimal places for  $\theta$ , or 4 decimal places for  $x$ , getting the general solution and the first three positive values of  $\theta$  and  $x$ .*

5.  $\theta = \cos^{-1} 0.91$
6.  $\theta = \sin^{-1} 0.53$
7.  $\theta = \cos^{-1}(-0.15)$
8.  $\theta = \sin^{-1}(-0.16)$
9.  $x = \cos^{-1} 0.26$
10.  $x = \sin^{-1} 0.98$
11.  $x = \cos^{-1}(-0.11)$
12.  $x = \sin^{-1}(-0.63)$

*Find the exact principal value of  $\theta$  and  $x$ .*

13.  $\theta = \text{Cos}^{-1} \frac{\sqrt{3}}{2}$
14.  $\theta = \text{Sin}^{-1} \left( -\frac{1}{2} \right)$
15.  $x = \text{Sin}^{-1} \left( \frac{\sqrt{2}}{2} \right)$
16.  $x = \text{Cos}^{-1} \left( -\frac{1}{2} \right)$
17.  $x = \text{Cos}^{-1}5$  (Surprise?!)
18.  $\theta = \text{Sin}^{-1}(-3)$  (Surprise!?)