

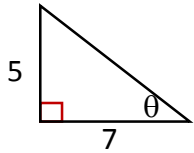
# Pre-Calculus

Name \_\_\_\_\_

## Chapter 4 Review

**No calculator is to be used on this portion of the review.**

1. Find the exact value of the six trig functions of  $\theta$ .



$\sin \theta =$  \_\_\_\_\_

$\csc \theta =$  \_\_\_\_\_

$\cos \theta =$  \_\_\_\_\_

$\sec \theta =$  \_\_\_\_\_

$\tan \theta =$  \_\_\_\_\_

$\cot \theta =$  \_\_\_\_\_

2. Given an angle in standard position whose terminal side passes through  $(4, -3)$ , find the values of the six trig functions.

$\sin \theta =$  \_\_\_\_\_  $\csc \theta =$  \_\_\_\_\_

$\cos \theta =$  \_\_\_\_\_  $\sec \theta =$  \_\_\_\_\_

$\tan \theta =$  \_\_\_\_\_  $\cot \theta =$  \_\_\_\_\_

3. Find the exact value of  $\csc \theta$  if  $\cos \theta = -\frac{6}{7}$  and  $\tan \theta < 0$ .

4. Find the exact value of  $\cot \theta$  if  $\sin \theta = \frac{2}{3}$  and  $\sec \theta < 0$ .

5. Convert  $\frac{5\pi}{4}$  to degrees.

6. What is the coordinate associated with the angle  $\theta = -\frac{5\pi}{6}$  on the unit circle?

7. Find the exact value for each trig function.

a.  $\cos \frac{5\pi}{6} =$  \_\_\_\_\_

b.  $\csc 2\pi =$  \_\_\_\_\_

c.  $\tan 120^\circ =$  \_\_\_\_\_

d.  $\sec \frac{7\pi}{4} =$  \_\_\_\_\_

8. Find the angles in radians that satisfy the following:

a.  $\sin \theta = -\frac{\sqrt{3}}{2}$   $\theta =$  \_\_\_\_\_

b.  $\cot \theta = 0$   $\theta =$  \_\_\_\_\_

c.  $\sec \theta = -\sqrt{2}$   $\theta =$  \_\_\_\_\_

d.  $\tan \theta = -1$   $\theta =$  \_\_\_\_\_

**Graph the following.**

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

10.  $y = -2 + \sec x$

11.  $y = \tan x$

12.  $y = 1 + \cos 2x$

**A calculator may be used on this portion of the review. Answers should be accurate to 2 decimal places unless otherwise specified.**

13. Find the arc length of a sector with radius of 8 inches and a central angle of  $315^\circ$ .

14. A sprinkler system is set to spray water over a distance of 15 meters and rotate through an angle of  $125^\circ$ . Draw a diagram that shows the region to be watered and find the area of the region.

15. Use a calculator to evaluate each trig value. Answers should be accurate to 4 decimal places.

a.  $\cos 104^\circ =$  \_\_\_\_\_

b.  $\cot \frac{2}{3} =$  \_\_\_\_\_

c.  $\sec \frac{3\pi}{7} =$  \_\_\_\_\_

16. Use a calculator to evaluate each expression.

a.  $\arcsin 0.65 =$  \_\_\_\_\_

b.  $\tan^{-1} 25 =$  \_\_\_\_\_

c.  $\operatorname{arcsec} 2.54 =$  \_\_\_\_\_

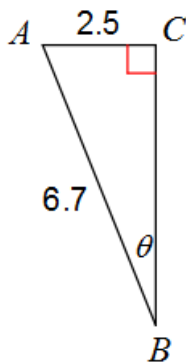
17. A point on a rim of a wheel has a linear speed of 36 cm/s. If the radius of the wheel is 15 cm, what is the angular speed of the wheel in radians per second? ( $v = r\omega$ )

18. When standing 400 feet from a wind turbine the angle of elevation to the top is  $33^\circ$ . How tall is the turbine?

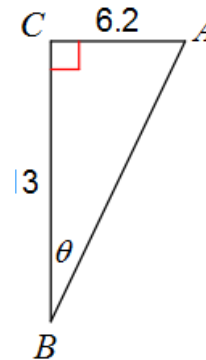
19. If you were to sit on the floor 10 feet away from the biggest IMAX screen in North America which is 75 feet high, what is the angle of elevation to the top of the screen?

20. At a point 65 feet from the base of a church, the angles of elevation to the bottom of the steeple and the top of the steeple are  $35^\circ$  and  $43^\circ$  respectively. Find the height of the steeple.

21. Find  $\theta$ .



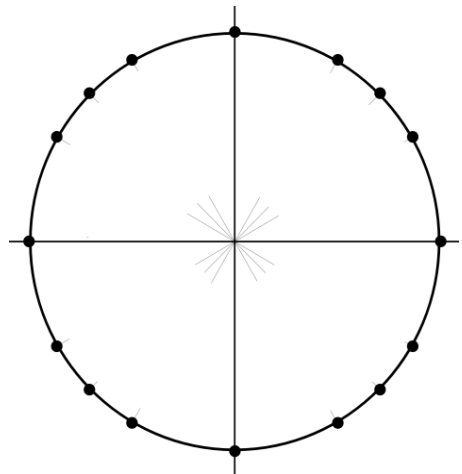
22. Find  $\theta$ .



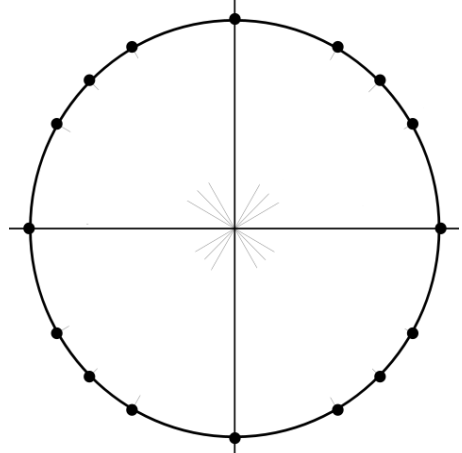
23. Find the reference angle for  $253^\circ$ .

24. Find one positive and one negative coterminal angle for  $\frac{3\pi}{5}$ .

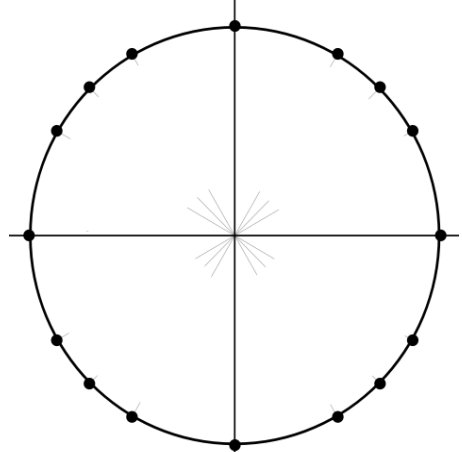
$\theta$ (degrees)	$0^\circ$	$30^\circ$	$45^\circ$	$60^\circ$	$90^\circ$	$180^\circ$	$270^\circ$
$\theta$ (radians)							
$\sin \theta$							
$\cos \theta$							
$\tan \theta$							



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$\theta$ (radians)							
$\sin \theta$							
$\cos \theta$							
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