

## Trigonometry Test #1 Practice Problems

Read each question carefully. **Give exact, simplified answers.** You do not have to rationalize denominators unless specifically stated. You must show all work in order to earn full credit. **Circle your final answer.**

1. Find the exact value of the following.

a.  $\cot \frac{\pi}{3}$

b.  $\sin \frac{\pi}{4}$

c.  $\csc \frac{\pi}{2}$

d.  $\cos 30^\circ$

e.  $\sec 60^\circ$

2. Find the exact value of the following.

a.  $\cos 225^\circ$

b.  $\tan(-240^\circ)$

c.  $\sec 540^\circ$

d.  $\sin(-150^\circ)$

e.  $\csc 135^\circ$

3. a. Find the exact value of  $\csc\left(-\frac{\pi}{2}\right)$ .

b. Find the exact value of  $\cot \frac{5\pi}{4}$ .

c. Find the exact value of  $\csc \frac{11\pi}{6}$ .

d. Find the exact value of  $\csc\left(-\frac{\pi}{2}\right) \cot \frac{5\pi}{4} - \csc \frac{11\pi}{6}$ .

4. Given that  $\tan \theta = -\frac{12}{5}$  and  $\theta$  is in Quadrant IV, find the other 5 trig functions of  $\theta$ .

a.  $\sin \theta =$

d.  $\csc \theta =$

b.  $\cos \theta =$

e.  $\cot \theta =$

c.  $\sec \theta =$

5. Given that the terminal side of an angle  $\beta$  passes through the point  $(-2, 4)$ ,

a. Draw a picture depicting the reference triangle with accurately labeled sides.

c. Evaluate  $\cot \beta$ .

d. Evaluate  $\csc \beta$ .

e. Evaluate  $\cos \beta$ .

b. Find the length of the hypotenuse.  
(simplify all radicals)

6. Given  $\theta = \frac{23\pi}{6}$ ,

- a. Convert  $\theta$  to degrees.
- b. In which quadrant does the terminal side of  $\theta$  lie?
- c. What is the degree measure of its reference angle?
- d. Draw a picture depicting the reference triangle with accurately labeled sides.
- e. Find the exact value of  $\cos \theta$ .

7. Write the following in terms of  $\sin 38^\circ$  and  $\cos 38^\circ$ .

a.  $\csc 322^\circ =$

b.  $\tan 52^\circ =$

8. The angle of depression from the top of a cliff to an object on the ground is  $30^\circ$ . If the object is 250 feet from the base of the cliff, how tall is the cliff? Give an exact answer in feet.

9. A child rides his tricycle at a rate of 20 miles per hour. If the diameter of the front wheel is 8 inches, find the angular speed of the wheel in revolutions per minute. Give an exact answer, in terms of  $\pi$  if necessary.

10. Find the exact measure in inches of the radius of a circle with a central angle of  $72^\circ$  that subtends an arc of length 8 feet.