

Read each question carefully. Give exact answers. You do not have to rationalize denominators unless specifically stated. Circle your final answer.

1. Find the exact value of the following.

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

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

c. $\tan \frac{\pi}{6}$

d. $\sec 30^\circ$

e. $\csc 45^\circ$

2. Find the exact value of the following.

a. $\sin 270^\circ$

b. $\cos -225^\circ$

c. $\sec 315^\circ$

d. $\csc 420^\circ$

e. $\cot -135^\circ$

3. a. Find the exact value of $\cos \frac{2\pi}{3}$.

b. Find the exact value of $\tan \frac{7\pi}{4}$.

c. Find the exact value of $\sin \frac{7\pi}{6}$.

d. Find the exact value of $\cos \left(\frac{2\pi}{3}\right) \tan \left(\frac{7\pi}{4}\right) - \sin \left(\frac{7\pi}{6}\right)$.

Write the answer as a single fraction with a rationalized denominator.

4. Given that $\sin \theta = -\frac{3}{5}$ and θ is in Quadrant III, find the other 5 trig functions of θ .

a. $\cos \theta =$

d. $\csc \theta =$

b. $\tan \theta =$

e. $\cot \theta =$

c. $\sec \theta =$

5. Given that the terminal side of an angle β passes through the point $(-1, 6)$,

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

c. Evaluate $\cot \beta$.

d. Evaluate $\cos \beta$.

e. Evaluate $\csc \beta$.

b. Find the length of the hypotenuse.

6. Given $\theta = \frac{5\pi}{3}$,

a. Convert θ to degrees.

b. In which quadrant does the terminal side of θ 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 $\csc \theta$.

7. Given that $\sec 14^\circ \approx 1.0306$, $\csc 14^\circ = 4.1336$, and $\cot 14^\circ \approx 4.0108$, find (without using a calculator),

a. $\sec 76^\circ =$

b. $\csc 76^\circ =$

8. The angle of depression to the bottom of a slide is 60° . If a child slides down at a rate of 5 feet per second, and it takes 2 seconds for the child to reach the bottom, what is the vertical height of the slide, in feet?

9. A wheel with a 24 inch diameter rotates at a rate of 5 revolutions per minute. What is the linear speed of a point on its rim in feet per second?

10. Find the exact measure in centimeters of the intercepted arc of a circle with radius 25 centimeters and central angle 45° .