

1. Find two co-terminal angles (one positive and one negative) for the following.

a. 237° $597^\circ, -123^\circ$

c. $\frac{7\pi}{9}$ $\frac{25\pi}{9}, -\frac{11\pi}{9}$

b. -425° $295^\circ, -65^\circ$

d. $\frac{14\pi}{5}$ $\frac{4\pi}{5}, -\frac{6\pi}{5}$

2. Find the complement (if it exists) and the supplement of each angle.

a. 95° C: \emptyset S: 85°

c. $\frac{3\pi}{7}$ C: $\frac{\pi}{14}$ S: $\frac{4\pi}{7}$

b. 32° C: 58° S: 148°

d. $\frac{5\pi}{9}$ C: \emptyset S: $\frac{4\pi}{9}$

4. Convert from radians to degrees or degrees to radians without a calculator.

a. 300° $5\pi/3$

c. $\frac{4\pi}{15}$ 48°

b. 620° $31\pi/9$

d. $\frac{7\pi}{6}$ 210°

5. State the six trig functions for the following.

a. $\sin \theta = \frac{2}{3}$ and $\tan \theta < 0$
 $\cos \theta = -\frac{\sqrt{5}}{3}$ $\csc \theta = \frac{3}{2}$ $\cot \theta = -\frac{\sqrt{5}}{2}$
 $\tan \theta = -\frac{2}{\sqrt{5}}$ $\sec \theta = -\frac{3}{\sqrt{5}}$

b. $\sec \theta = -\frac{4}{3}$ and $\sin \theta < 0$
 $\sin \theta = -\frac{\sqrt{7}}{4}$ $\tan \theta = \frac{\sqrt{7}}{3}$ $\cot \theta = \frac{3}{\sqrt{7}}$
 $\cos \theta = -\frac{3}{4}$ $\csc \theta = -\frac{4}{\sqrt{7}}$

c. the point $(-3, -5)$ is on the terminal side of angle θ .
 $\sin \theta = -\frac{5}{\sqrt{34}}$ $\tan \theta = -\frac{5}{3}$ $\sec \theta = \frac{\sqrt{34}}{3}$
 $\cos \theta = -\frac{3}{\sqrt{34}}$ $\csc \theta = -\frac{\sqrt{34}}{5}$ $\cot \theta = -\frac{5}{\sqrt{34}}$

6. What quadrant am I in?

a. $\frac{10\pi}{13}$ II b. -2.57 radians III c. 411° I d. $\frac{11\pi}{7}$ IV

7. State the ratios for the following.

a. $\sin 60^\circ$ $\frac{\sqrt{3}}{2}$ b. $\sec \frac{\pi}{4}$ $\sqrt{2}$ c. $\tan 45^\circ$ 1 d. $\cos 30^\circ$ $\frac{\sqrt{3}}{2}$ e. $\cot \frac{\pi}{6}$ $\sqrt{3}$ f. $\frac{\sec \pi}{\csc \frac{\pi}{3}}$ 2

3. Find theta in radians $[0, \frac{\pi}{2})$ and in degrees $[0^\circ, 90^\circ)$

a. $\sin \theta = \frac{1}{\sqrt{2}}$ b. $\sec \theta = \frac{2}{\sqrt{3}}$ c. $\cot \theta = 1$ d. $\cos \theta = \frac{1}{2}$ e. $\csc \theta = 2$ f. $\tan \theta = \sqrt{3}$

You may use your calculator for the following problems.

9. Find the value of the following.

a. $\tan 27^\circ$.5095 b. $\sec \frac{2\pi}{7}$ 1.6039 c. $\sin 2.7$.4374

10. Find the angle measure(s) of θ in radians over the interval $[0, \frac{\pi}{2})$ and degrees over the interval $[0, 90^\circ)$.

a. $\tan \theta = 1.5265$ R: .99
D: 56.77° b. $\cos \theta = 0.9517$ R: .31
D: 17.38° c. $\csc \theta = 1.184210$ R: 1.01
D: 57.4°

11. Determine the angular speed in radians per second of a wheel turning 124 revolutions per minute.

12.99 rad/min

12. Determine the number of revolutions per minute of the wheel rotating 151 rad/s.

1441.94 rev/min

13. A Ferris wheel 250 ft in diameter makes one revolution every 45 seconds. Determine the linear speed of a car on the rim of the wheel.

17.45 ft/sec

14. A large merry-go-around is four horses deep. What seat should a child choose for the fastest ride? For the slowest?

outside / inside

15. Astronomy: A space telescope travels about the earth in a circular orbit at a distance of 380 mi from the earth's surface. It makes one orbit every 95 min. Find its linear speed in mph. (the radius of the earth is approximately 3960 mi).

17222.54 mph

16. A car is moving at a speed of 65 mph. The diameter of the wheels is 2.5 ft. Find the angular speed of the wheel in radians per minute and find the number of revolutions per minute the wheels are rotating.

AS = 4576 rad/min 728.29 rev/min

17. Find the arc length on a circle that corresponds to a central angle of 35 degrees if the radius of the circle is 6.2 inches.

AL = 3.78 in

18. Find the central angle, in degrees, which corresponds to an arc length of 17 ft if the diameter of the circle is 25 feet.

77.92°

19. Find the area of the sector with a central angle of 75 degrees and a radius of 16 feet,

167.55 ft²