

1. Find the exact value of the following.

a. $\cos 150^\circ$

f. $\sec \frac{3\pi}{2}$

b. $\tan \frac{7\pi}{4}$

g. $\sin \frac{11\pi}{6}$

c. $\sin \frac{4\pi}{3}$

h. $\csc 450^\circ$

d. $\cos \pi$

i. $\sec \frac{11\pi}{6}$

e. $\cot 225^\circ$

j. $\tan \frac{2\pi}{3}$

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

a. 237°

c. $\frac{7\pi}{9}$

b. -425°

d. $\frac{14\pi}{5}$

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

a. 95°

c. $\frac{3\pi}{7}$

b. 32°

d. $\frac{5\pi}{9}$

4. Find the reference angle for the following.

a. 87°

e. $\frac{2\pi}{5}$

b. -275°

f. $\frac{7\pi}{9}$

c. 195°

g. $-\frac{10\pi}{11}$

d. 289°

h. $\frac{12\pi}{23}$

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

a. 300°

c. $\frac{4\pi}{15}$

b. 600°

d. $\frac{7\pi}{6}$

6. State the six trig functions for the following.

a. $\sin \theta = \frac{2}{3}$ and $\tan \theta < 0$

b. $\sec \theta = -\frac{4}{3}$ and $\sin \theta > 0$

c. the point $(-3, -5)$ is on the terminal side of angle θ .

7. Find the angle measure(s) of θ in radians over the interval $[0, 2\pi)$ and degrees over the interval $[0, 360^\circ)$.

a. $\sin \theta = -\frac{1}{\sqrt{2}}$

d. $\cot \theta = 1$

b. $\cos \theta = \frac{\sqrt{3}}{2}$

e. $\csc \theta = 0$

c. $\tan \theta = -\sqrt{3}$

f. $\sec \theta = \pi d$

You may use your calculator for the following problems.

8. Find the value of the following.

a. $\tan 27^\circ$

b. $\sec 85^\circ$

c. $\sin 2.7$

9. Find the angle measure(s) of θ in radians over the interval $[0, 2\pi)$ and degrees over the interval $[0, 360^\circ)$.

a. $\tan \theta = 1.8265$

b. $\cos \theta = -0.9517$

c. $\csc \theta = -1.184210$

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

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

12. 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.

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

14. 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).

15. 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.

16. 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.

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

Honors Algebra II
6.1-6.3 Review

Name KEY

1. Find the exact value of the following.

a. $\cos 150^\circ = -\frac{\sqrt{3}}{2}$

b. $\tan \frac{7\pi}{4} = -1$

c. $\sin \frac{4\pi}{3} = -\frac{\sqrt{3}}{2}$

d. $\cos \pi = -1$

e. $\cot 225^\circ = 1$

f. $\sec \frac{3\pi}{2} = \text{UND}$

g. $\sin \frac{11\pi}{6} = -\frac{1}{2}$

h. $\csc 450^\circ = 1$

i. $\sec \frac{11\pi}{6} = \frac{2}{\sqrt{3}}$

j. $\tan \frac{2\pi}{3} = -\sqrt{3}$

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

a. $237^\circ = 597^\circ, -123^\circ$

b. $-425^\circ = -65^\circ, 295^\circ$

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

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

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

a. 95° C: ONE S: 85°

b. 32° C: 58° S: 148°

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

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

4. Find the reference angle for the following ~~2~~

a. $87^\circ = 87^\circ$

b. $-275^\circ = 85^\circ$

c. $195^\circ = 15^\circ$

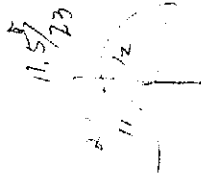
d. $289^\circ = 71^\circ$

e. $\frac{2\pi}{3} = \frac{2\pi}{3}$

f. $\frac{7\pi}{9} = \frac{2\pi}{9}$

g. $-\frac{10\pi}{11} = \frac{\pi}{11}$

h. $\frac{12\pi}{23} = \frac{12\pi}{23}$



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

a. $300^\circ = 5\pi/3$

b. $600^\circ = 10\pi/3$

c. $\frac{4\pi}{15} = 48^\circ$

d. $\frac{7\pi}{6} = 210^\circ$

6. State the six trig functions for the following.

a. $\sin \theta = \frac{2}{3}$ and $\tan \theta < 0$

b. $\sec \theta = -\frac{4}{3}$ and $\sin \theta > 0$

c. the point $(-3, -5)$ is on the terminal side of angle θ .

7. Find the angle measure(s) of θ in radians over the interval $[0, 2\pi)$

and degrees over the interval $[0, 360^\circ)$.

a. $\sin \theta = -\frac{1}{\sqrt{2}}$ $\theta = 225^\circ, 5\pi/4, 315^\circ, 7\pi/4$

b. $\cos \theta = \frac{\sqrt{3}}{2}$ $\theta = 30^\circ, \pi/6, 330^\circ, 11\pi/6$

c. $\tan \theta = -\sqrt{3}$ $\theta = 120^\circ, 2\pi/3, 300^\circ, 5\pi/3$

You may use your calculator for the following problems.

8. Find the value of the following.

a. $\tan 27^\circ = .51$

b. $\sec 85^\circ = 11.474$

c. $\sin 2.7 = .427$

9. Find the angle measure(s) of θ in radians over the interval $[0, 2\pi)$

and degrees over the interval $[0, 360^\circ)$.

a. $\tan \theta = 1.8265$ $\theta = 0.13^\circ, 1.07$

b. $\cos \theta = -0.9517$ $\theta = 162.12^\circ, 2.83$

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

124 rev $\cdot \frac{2\pi}{1 \text{ min}} = 179.115 \text{ rad/sec}$

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

151 rad/sec $\cdot \frac{60 \text{ sec}}{1 \text{ min}} = 24.032 \text{ rev/min}$

12. 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.

$\frac{2\pi \text{ RAD}}{45 \text{ sec}} \cdot 125 \text{ ft} = 17.453 \text{ ft/sec}$

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

OUTSIDE FASTEST INSIDE SLOWEST

14. 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).

$\frac{2\pi \text{ min}}{95 \text{ min}} \cdot 4340 \text{ mile} \cdot \frac{60 \text{ min}}{1 \text{ hr}} = 17,222 \text{ mi/hr}$

15. 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.

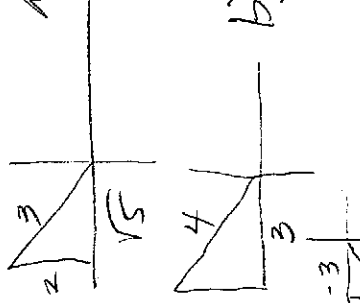
$\frac{65 \text{ mph}}{5280 \text{ ft}} \cdot \frac{60 \text{ min}}{1 \text{ hr}} \cdot 5720 \text{ ft} = 2\pi (1.25) \times$

16. Find the arc length on a circle that corresponds to a central angle of 35 degrees if the radius of the circle is 62 inches.

$(6.2)(35) \left(\frac{\pi}{180}\right) = 3.787 \text{ in}$

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

$17 = 25 \times .68 \left(\frac{180}{\pi}\right) = 38.96^\circ$



a) $S: \frac{2}{3}$ $Csc: \frac{3}{2}$
 $C: -\frac{\sqrt{13}}{3}$ $Sec: -\frac{3}{\sqrt{13}}$
 $T: -\frac{2}{\sqrt{13}}$ $Cot: -\frac{\sqrt{13}}{2}$

b) $S: \frac{4}{5}$ $Csc: \frac{5}{4}$
 $C: \frac{3}{5}$ $Sec: \frac{5}{3}$
 $T: \frac{4}{3}$ $Cot: \frac{3}{4}$

c) $S: -\frac{5}{\sqrt{34}}$ $Csc: -\frac{\sqrt{34}}{5}$
 $C: -\frac{3}{\sqrt{34}}$ $Sec: -\frac{\sqrt{34}}{3}$
 $T: \frac{5}{3}$ $Cot: \frac{3}{5}$

d. $\cot \theta = 1$
 $\theta = 45^\circ, \frac{\pi}{4}, 225^\circ, \frac{5\pi}{4}$
e. $\csc \theta = 0$
 $\theta = DNE$
f. $\sec \theta = \frac{1}{\sin \theta}$
 $\theta = 90^\circ, \frac{\pi}{2}, 270^\circ, \frac{3\pi}{2}$

$\theta = 302.397^\circ, 5.278$

$\theta = 237.613^\circ, 4.147$

$\theta = 12.985 \text{ RAD/min}$

$\theta = 1441.44 \text{ REV/min}$

$\theta = 17.453 \text{ ft/sec}$

$\theta = 17,222 \text{ mi/hr}$

$\theta = 2\pi (1.25) \times$

$\theta = 3.787 \text{ in}$

$\theta = 38.96^\circ$

$\theta = 4576 \text{ RAD/min}$