

This is a take-home test. You may use your notes, the book, etc. This test is due on Tuesday, September 9, 2008 at class time. Late tests will not be accepted! Remember to simplify all of your answers and show your work for credit!

Change the following to radian measure:

1)  $215^\circ$

2)  $125^\circ$

$$\frac{43\pi}{36}$$

$$\frac{25\pi}{36}$$

Change the following to degree measure:

3)  $\frac{5\pi}{8}$  radians

4) 4.6 radians

$$112.5^\circ$$

$$263.56^\circ$$

Find the following, if they exist. Round answers to four decimal places.

5)  $\sin 627^\circ$

6)  $\csc 248^\circ$

7)  $\sec 316^\circ$

8)  $\tan 118^\circ$

9)  $\cot 21^\circ$

$$-0.9986$$

$$-1.0785$$

$$1.3902$$

$$-1.8807$$

$$2.6051$$

Solve for x.

10)  $\tan 60^\circ = \frac{x}{4.8}$

11)  $\sec x = 4.821$

12)  $\cos 132^\circ = \frac{3.5}{x}$

13)  $\cot 158^\circ = \frac{x}{9}$

$$8.3$$

$$78.03^\circ$$

$$-5.23$$

$$-22.28$$

14) Given a circle having a radius of 24 cm, an angle  $\theta$  intercepts an arc length of 16 cm.

a) Find the angle measure  $\theta$  in radians.

b) Find the angle measure  $\theta$  in degrees.

$$\frac{2}{3} \text{ radians}$$

$$38.2^\circ$$

15) In a circle with a radius of 16.4 feet, how long is an arc associated with a central angle of  $\frac{7\pi}{4}$  radians?

$$90.2 \text{ feet}$$

Find the angle measure between  $0^\circ$  and  $360^\circ$  that is coterminal with the given angle measure.

16)  $942^\circ$

17)  $-879^\circ$

18)  $-26^\circ$

19)  $1457^\circ$

$$222^\circ$$

$$201^\circ$$

$$334^\circ$$

$$17^\circ$$

Name the two angles between  $0^\circ$  and  $180^\circ$  having the following measures. Round answers to the nearest tenth of a degree.

20)  $\sin B = 0.345$

$20.2^\circ, 159.8^\circ$

21)  $\sin Q = 0.8$

$53.1^\circ, 126.9^\circ$

22)  $\sin A = 0.0157$

$0.9^\circ, 179.1^\circ$

23)  $\sin T = 0.9942$

$83.8^\circ, 96.2^\circ$

24) From a highway overpass 52 feet above the road, the angle of depression of a car parked on the side of the road is measured at  $22.3^\circ$ . How far away is the car from a point on the highway directly below the overpass?

$126.8$  feet

25) From a 150-foot observation tower on the shoreline, a Coast Guard officer sights a boat in difficulty. The angle of depression from the sight of the officer to the boat is  $11^\circ$ . How far is the boat from the base of the observation tower on the shoreline?

$771.7$  feet

26) An airplane travels 220 miles in a direction of  $200^\circ$  from Atlanta. At the end of this time:

a) How far south of Atlanta is the plane?

b) How far west of Atlanta is the plane?

$206.7$  miles

$75.2$  miles

27) Convert  $32^\circ 17' 26''$  to decimal degree notation. Round your answer to four decimal places.

$32.2906^\circ$

28) Convert  $151.458^\circ$  to degrees, minutes, and seconds, if necessary. Round to the nearest second.

$151^\circ 27' 29''$

29) Find the complement of  $57^\circ 18' 52''$ .

$32^\circ 41' 8''$

30) Find the supplement of  $57^\circ 18' 52''$ .

$122^\circ 41' 8''$