MATH 104/GRACEY Name_____

WORKSHEET/3.1-3.2

Convert the degree measure to radians. Leave answer as a multiple of π.

1) $30°$

2) $-45°$

3) $330°$

4) $288°$

5) $-450°$

Convert the radian measure to degrees. Round to the nearest hundredth if necessary.

6) $\frac{\pi}{4}$

7) $\frac{10\pi}{3}$

8) 2π

9) -15π

Convert the degree measure to radians, correct to four decimal places. Use 3.1416 for π.

10) $350°46'$

11) $81°$

12) $21.8431°$

Convert the radian measure to degrees. Give answer using decimal degrees to the nearest hundredth. Use 3.1416 for π.

13) 0.2521

14) 1

Find the exact value without using a calculator.

15) $\cos\left(\frac{2\pi}{3}\right)$

16) $\sin\frac{3\pi}{4}$

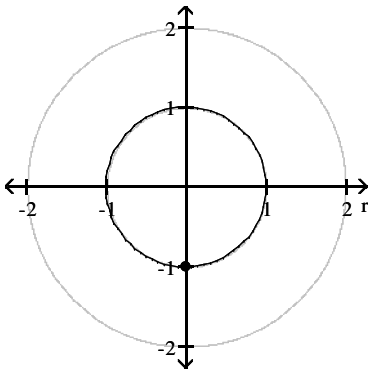
17) $\tan\frac{-5\pi}{6}$

18) $\csc\frac{4\pi}{3}$

19) $\cot\pi$

Find the corresponding angle measure in radians.

20) 270°



Solve the problem.

21) Through how many radians will the hour hand on a clock rotate in 36 hours?

22) A circular pulley is rotating about its center. Through how many radians would it turn in 11 rotations?

Find the length of an arc intercepted by a central angle θ in a circle of radius r. Round your answer to 1 decimal place.

23) $r = 38.81$ ft; $\theta = \frac{\pi}{3}$ radians

Assume that the cities lie on the same north–south line and that the radius of the earth is 6400 km.

24) Find the distance between City E, 20° N and City F, 58° S. (Round to the nearest kilometer.)

Solve the problem.

25) A pendulum of length 19.1 inches swings 4°23′ to each side of its vertical position. To the nearest hundredth of an inch, what is the length of the arc through which the end of the pendulum swings?

26) A bicycle with a 24–inch wheel (diameter) travels a distance of 1000 feet. How many revolutions does the wheel make (to the nearest revolution)?

Assume that the cities lie on the same north–south line and that the radius of the earth is 6400 km.

27) Find the distance between City A, 60° N and City B, 35° N. (Round to the nearest kilometer.)

Solve the problem.

28) A car wheel has a 16–inch radius. Through what angle (to the nearest tenth of a degree) does the wheel turn when the car rolls forward 2 ft?

29) A pulley rotates through 82° in one minute. How many rotations does the pulley make in an hour?

Approximate the length by finding the necessary arc length.

30) A tree 550 m away subtends an angle of 2°. Find the height of the tree.

Find the area of a sector of a circle having radius r and central angle θ. Express the answer to the nearest tenth.

31) r = 67.4 cm, $\theta = \frac{\pi}{7}$ radians

32) r = 20.0 m, θ = 20°

Solve the problem. Round answer to 2 decimal places.

33) Find the measure (in radians) of a central angle of a sector of area 52 square inches in a circle of radius 6 inches.

34) A pendulum swings through an angle of 9° each second. If the pendulum is 14 cm in length and the complete swing from right to left lasts 4 seconds, what area is covered by each complete swing?

35) A sensor light installed on the edge of a home can detect motion for a distance of51 ft. in front and with a range of motion of 204°. Over what area will the sensor detect motion and become illuminated?

Find the length of an arc intercepted by a central angle θ in a circle of radius r. Round your answer to 1 decimal place.

36) r = 31.31 in.; θ = 92°

1) $\frac{\pi}{6}$

2) $-\frac{\pi}{4}$

3) $\frac{11\pi}{6}$

4) $\frac{8\pi}{5}$

5) $-\frac{5\pi}{2}$

6) 45°
7) 600°
8) 360°
9) −2700°
10) 6.122
11) 1.4137
12) 0.3812
13) 14.44°
14) 57.30°

15) $-\frac{1}{2}$

16) $\frac{\sqrt{2}}{2}$

17) $\frac{\sqrt{3}}{3}$

18) $-\frac{2\sqrt{3}}{3}$

19) undefined

20) $\frac{3\pi}{2}$

21) 6π
22) 22π
23) 40.6 ft
24) 8713 km
25) 2.92 in.
26) 159 revolutions
27) 2793 km
28) 85.9°
29) 13.7 rotations
30) 19 m
31) 1019.4 cm^2
32) 69.8 m^2
33) 2.89 radians
34) 61.58 cm^2
35) 4630.39 ft^2
36) 50.3 in.