**9-2 Recitation Activity**

**Degrees, Radians, and Reference Angles**

Yoshiwara 4.1

1. For each angle, if it is given in degrees, convert to radians. If it is given in radians, convert to degrees.
2. 242° b. 148° c. -86° d. 3.79 e. 5.16 f. -4.78 g.
3. For the given angle, find its reference angle:
4. 242° b. 148° c. -86° d. 3.79 e. 5.16 f. -4.78 g.
5. For each of these, find three angles with the given reference angle.
6. 68° b. 1.34
7. For each of these, find the exact value(s) of θ on [0, 2π] that make the statement true.
8. sin θ = - sin 1.3
9. tan θ = - tan 4.6
10. cos θ = - cos 3.5
11. sin θ =
12. cos θ =
13. tan θ =
14. (FM 9.1).
15. If cos θ = and sin θ > 0, find the exact values of the other trig ratios of θ.
16. If cot θ = - 3 and , find the exact values of the other trig ratios of θ.
17. Let θ be the angle in standard position whose terminal side contains the point (5, -9). Compute cos(θ) and sin(θ).
18. You start at the point (2, 0) and walk counterclockwise around a circle (centered at (0, 0)) of radius 2. If you walk 2.5 radians around the circle, at what point would you stop?

(Yoshiwara 6.1)

8.

1. Through how many radians does the minute hand of a clock sweep between 9:05 pm and 9:30 pm?
2. The dial of Big Ben's clock in London is 23 feet in diameter. How long is the arc traced by the minute hand between 9:05 pm and 9:30 pm?

9. The largest clock ever constructed was the Floral Clock in the garden of the 1904 World's Fair in St. Louis. The hour hand was 50 feet long, the minute hand was 75 feet long, and the radius of the clockface was 112 feet.

1. If you started at the 12 and walked 500 feet clockwise around the clockface, through how many radians would you walk?
2. If you started your walk at noon, how long would it take the minute hand to reach your position? How far did the tip of the minute hand move in its arc?

10. Some front-loading models of washing machines spin at a rate of 1500 rotations per minute.

1. If the radius of the drum is 11 inches, how far do your socks travel in one minute?
2. How fast are your socks traveling during the spin cycle?

(FM 8.1):

11. Mr. Brust rides his unicycle over a line of fresh paint. He continues to ride in a straight line leaving marks that are 6.5 feet apart. What is the radius of Mr. Brust’s unicycle tire?

12. (Yoshiwara 6.2): The Astrodome in Houston has a diameter of 710 feet. If you start at the easternmost point and walk counterclockwise around its perimeter for a distance of 250 feet, how far north of your starting point are you?

13. The Giant Wheel at Cedar Point is a circle with diameter 128 feet which sits on an 8 foot tall platform making its overall height is 136 feet. It completes two revolutions in 2 minutes and 7 seconds. Assuming the riders are at the edge of the circle, how fast are they traveling in miles per hour?