M408 Trigonometry
Chapter 3 Review
No Calculator

Name _____

Define Radian-

Know formulas for:

a.) Arc Length

b.) Area of a Sector

c.) Linear Velocity
(be familiar enough to convert between the three forms)

d.) Angular Velocity

Convert from degrees to radians, and radians to degrees. Leave radian answers as multiples of π.

1. 60° 1. _____

2. 216° 2. _____

3. $\frac{3\pi}{5}$ 3. _____

4. $-\frac{4\pi}{3}$ 4. _____

Evaluate each of the following without using a calculator.

5. $\tan\frac{3\pi}{4}$ 5. _____

6. $\sin\frac{2\pi}{3}$ 6. _____

7. $\sec\frac{5\pi}{6}$ 7. _____

8. $\cos\left(-\frac{7\pi}{4}\right)$ 8. _____

Find the following values for θ such that $0 \le \theta < 2\pi$.

9. $\sin\theta = -\frac{1}{2}$ 9. _____

10. $\tan\theta = 1$ 10. _____

Calculator

11. A circle has a radius of 8.765 cm. Find the length of the arc on this circle cut by a central angle of 42.15° 11. _____

12. Two cities on a North South line have latitudes of 105°N and 83°S, respectively. Find the distance between the two cities. Assume radius of the earth is 6400 km. 12. _____

Find s in each of the following. Assume that $0 \leq s < 2\pi$

13. tan s = -0.8629 13. _____

14. csc s = 1.7255 14. _____

Find the related numbers (reference angles) for each of the following radian angle measures.

15. 8.6139 15. _____

16. -1.9835 16. _____

Find the value of the following.

17. sin 1.5731 17. _____

18. cot 8.6581 18. _____

For the last three questions use the fact that a wheel with a radius of 14 inches turns at 180 revolutions per minute.

19. What is the angular velocity of the wheel per second? 19. _____

20. What is the speed of a point P on the edge of the wheel? 20. _____

21. How far will the wheel roll in 7 minutes? 21. _____

Other good problems to look at include Openers from class and the bookwork from section 3.4.