## HOMEWORK 6 - MATH 140 DUE DATE: Monday, March 14 INSTRUCTOR: George Voutsadakis

Read each problem very carefully before starting to solve it. One part of each homework problem will be chosen at random and graded. Each question is worth 1 point. It is necessary to show your work. Correct answers without explanations are worth 0 points.

## GOOD LUCK!!

1. Convert from radians to degrees or from degrees to radians as appropriate:

(a) 
$$120^{\circ}$$
 (b)  $\frac{5\pi}{12}$  (c)  $-225^{\circ}$  (d)  $-\frac{3\pi}{4}$ 

- 2. If A denotes the area of the sector of a circle of radius r formed by the central angle  $\theta$ , find the missing quantity:
  - (a) r = 6 feet,  $\theta = 2$  radians, A = ?
  - (b) r = 6 meters, A = 8 square meters,  $\theta = ?$
- 3. An object is traveling around a circle with a radius of 2 meters. If in 20 seconds the object travels 5 meters, what is the angular speed? hat is its linear speed?
- 4. Find the exact values of the following expressions:

(a) 
$$\cos(7\pi)$$
 (b)  $\sin(-3\pi)$  (c)  $\sin(30^{\circ}) - \cos(45^{\circ})$  (d)  $\tan(\frac{\pi}{3}) + \cos(\frac{\pi}{3})$ 

5. If the following is a point on the terminal side of an angle  $\theta$ , find  $\sin \theta$ ,  $\cos \theta$  and  $\cot \theta$ :

(a) 
$$(5, -12)$$
 (b)  $(-1, -2)$  (c)  $(\frac{1}{3}, -\frac{1}{4})$ 

- 6. Find the exact values of the remaining trigonometric functions of  $\theta$ :
  - (a)  $\sin \theta = -\frac{\sqrt{5}}{5}, \cos \theta = -\frac{2\sqrt{5}}{5}$
  - (b)  $\cos\theta = \frac{3}{5}$  and  $\theta$  is in quadrant IV
  - (c)  $\cot \theta = \frac{4}{3}$  and  $\cos \theta < 0$
- 7. If  $\cot \theta = -2$ , find the value of the expression  $\cot \theta + \cot (\theta \pi) + \cot (\theta 2\pi)$ .
- 8. (a) Determine the amplitude and the period of  $f(x) = -3\cos(\pi x)$  and use them to sketch the graph of y = f(x).
  - (b) Write an equation of a sine function of the form  $f(x) = A\sin(\omega x), A > 0$ , that has amplitude 5 and period  $\frac{2}{3}$ .