

By providing my signature below I acknowledge that this is my work, and I did not get any help from anyone else:

Name (sign): _____

Name (print): _____

Student Number: _____

Instructor's Name: _____

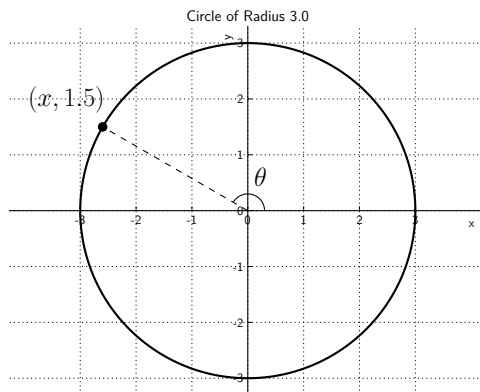
Meeting Time: _____

Problem Number	Points Possible	Points Made
1	10	
2	10	
3	10	
4	10	
5	15	
6	15	
7	15	
8	15	
Total:	100	

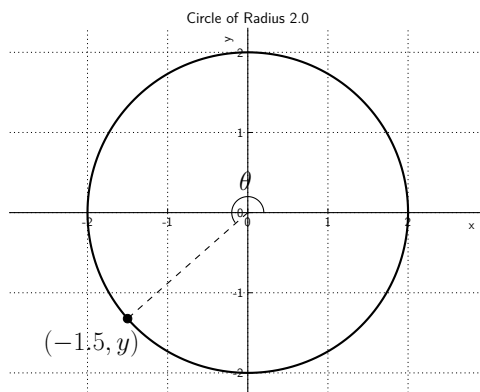
- If you need extra space use the last page.
- Please show your work. **An unjustified answer may receive little or no credit.**
- Your work must be **neat**. If I can't read it (or can't find it), I can't grade it.
- The total number of possible points that is assigned for each problem is shown here. The number of points for each subproblem is shown within the exam.
- Please turn off your mobile phone.
- You are only allowed to use a TI-30 calculator. No other calculators are permitted. You are not permitted to share a calculator or any other materials with anyone else during the test.

1. For each question below a diagram of a point on a circle is given. Answer each question about the angle formed by the line through the point, the origin, and the positive x -axis.

- (a) [5 pts] Determine the cosine of the angle θ . (Your answer should be a number and not have an x in it.)



- (b) [5 pts] Determine the tangent of the angle θ . (Your answer should be a number and not have a y in it.)



2. Determine angles, θ , that match the criteria in each question below.

(a) [5 pts] An angle that is coterminal with the angle $\alpha = \frac{\pi}{4}$ and is greater than π .

(b) [5 pts] An angle that is coterminal with the angle $\alpha = \frac{3\pi}{4}$ and is negative.

3. [10 pts] An angle, θ , is in the second quadrant, and $\sin(\theta) = 0.25$. Determine the cosine of the angle.

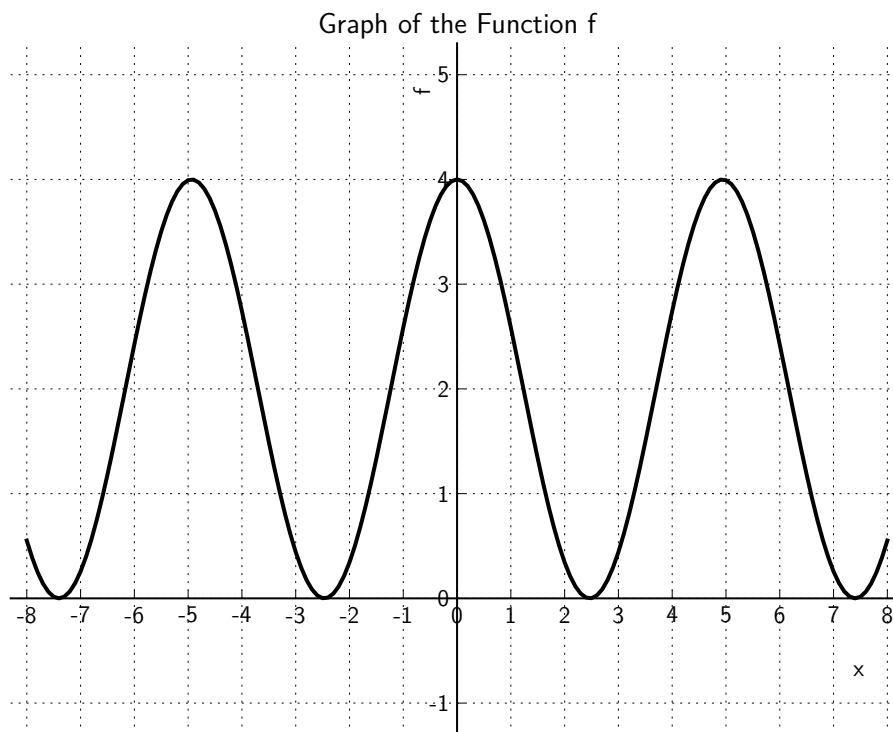
4. [10 pts] An angle, θ , is in the fourth quadrant, and $\cos(\theta) = 0.25$. Determine the tangent of the angle.

5. [15 pts] A bicycle wheel has a diameter of 0.70m, and the rider travels a distance of 1,000m. What is the angle that the wheel turned assuming the rider did not skid.

6. [15 pts] A function is given by

$$f(x) = A \sin(bx + c) + h,$$

and the graph of the function is shown in the figure below. The values of A and b are positive. Determine the values of A , b , c , and h , and write their values in the space below. (The value of c is not unique but provide a value that works.)



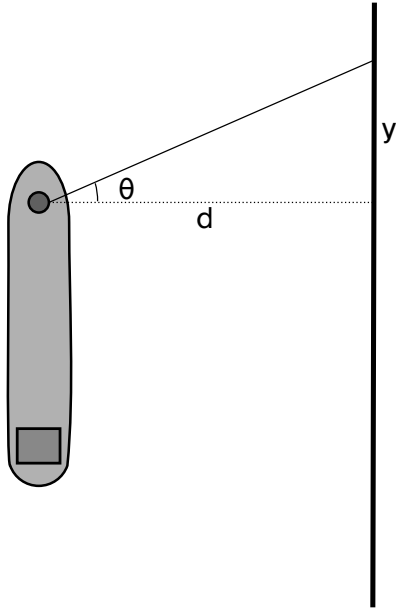
$$A = \underline{\hspace{2cm}}$$

$$b = \underline{\hspace{2cm}}$$

$$c = \underline{\hspace{2cm}}$$

$$h = \underline{\hspace{2cm}}$$

7. [15 pts] A ship is anchored a distance of $d = 150\text{m}$ from a beach. A spotlight on the bow of the ship can rotate, and the angle is measured from a line perpendicular to the beach that goes through the base of the spotlight. Determine the position, y , along the beach that the spotlight will illuminate given the angle, θ . (Your answer should be a function of θ and $-\pi/2 < \theta < \pi/2$.)



8. [15 pts] Two observers are standing a distance of 100m apart. They both spot an eagle and watch it closely. The moment it passes between them, the first observer measures an angle of elevation from the ground of 45° , and the second observer measures an angle of elevation from the ground of 35° . How high in the air was the eagle when it passed between the two observers?

Extra space for work. If you want us to consider the work on this page you should write your name, instructor and meeting time below.

Name (print): _____ Instructor: Name (print): _____ Time: _____