Math 120F
October 30, 1997
Quiz #5 (20 points)
Quiz #4 EC (8 points)

Name ____________________

TA section (Circle one): FA FB FC FD

Instructions: You have 40 minutes total for Quiz #5 and the extra credit. You **MUST** show work for credit. If in doubt, ask for clarification.

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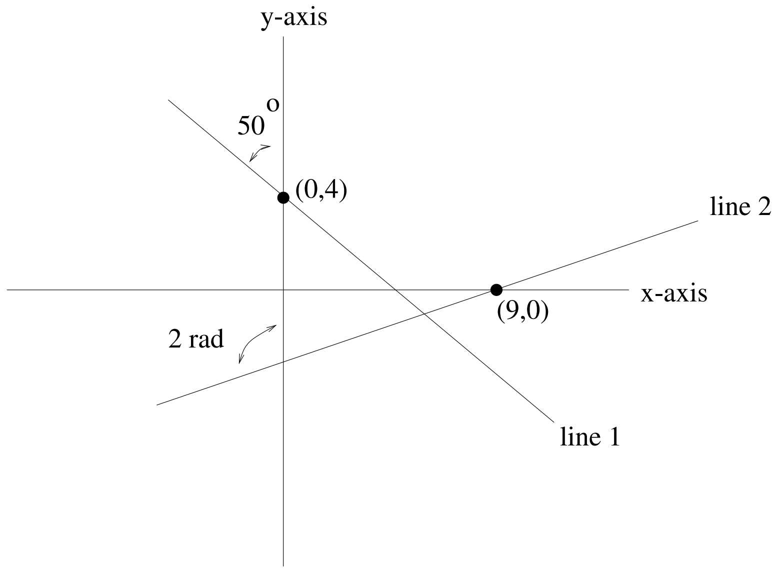
1. (8 points) Short answer.

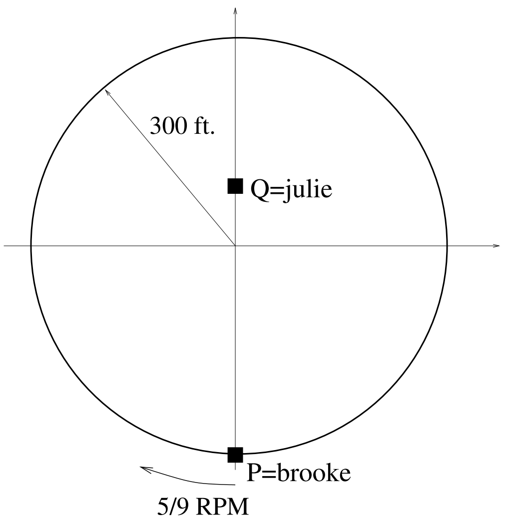
   (a) (2 pts.) An object is moving around a circle of radius 15 feet with angular speed 3.2 rad/sec. Is the linear speed of the object bigger than 30 mph?

   (b) (2 pts.) If $\cos(\theta) = \frac{-1}{5}$, find all possible values for $\sin(\theta)$.

   (c) (4 pts.) Write the equation of line 1 and line 2 in this picture:



2. (12 points) Brooke is running clockwise around a circular track of radius 300 feet. She starts at the location pictured running with an angular speed of $\frac{5}{9}$ RPM clockwise. Julie stands at the pictured location, 100 feet from the center of the circle.



(a) (2 pts.) When will Brooke first reach the location on the track closest to Julie?

(b) (4 pts.) Where is Brooke located in 40 seconds? (i.e. find her coordinates). Indicate this point in your picture and label it as $P(40)$.

(c) (2 pts.)How far has Brooke traveled (distance she has run) in 40 seconds?

(d) (4 pts.) Let $d(t)$ be the function that calculates the distance between Brooke and Julie at time t seconds.

i. If the domain is taken to be the time required for Brooke to complete one revolution, what is the range of $d(t)$?

ii. Write down a formula to calculate $d(t)$.

Quiz #4 Extra Credit

The points you score on this problem will be added to your score on Quiz #4 as <u>Extra Credit</u>. The total possible is 8 points.

We have a function $y = f(x)$ such that the domain of $f(x)$ is $-1 \leq x \leq 2$ and the range of $f(x)$ is $1 \leq y \leq \sqrt{10}$.

1. (2 pts.) What is the domain of $f(\frac{2}{3}(x+1))$?

2. (2 pts.) What is the range of $f(\frac{2}{3}(x+1))$?

3. (2 pts.) What is the domain of $\frac{2}{3}f(x) - 3$?

4. (2 pts.) What is the range of $\frac{2}{3}f(x) - 3$?