Math 120F
November 13, 1997
Quiz #6 (20 points)
TA section (Circle one): FA FB FC FD

Name ____________________

Instructions: You have 35 minutes total for Quiz #6. You **MUST** show work for credit. If in doubt, ask for clarification.

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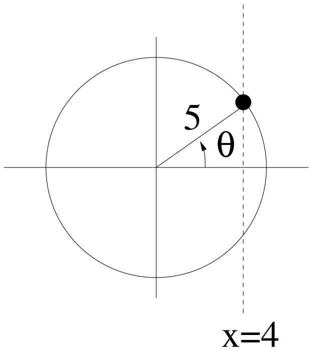
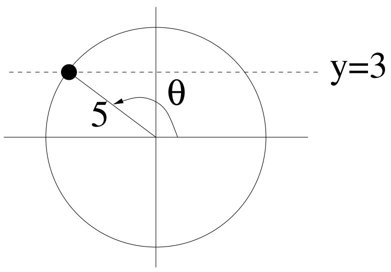
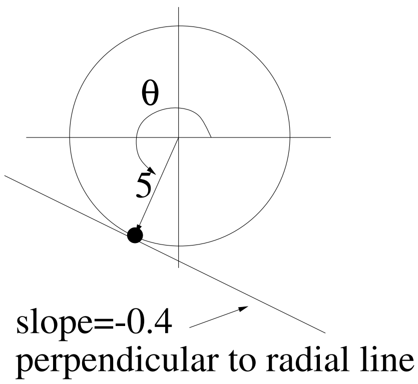
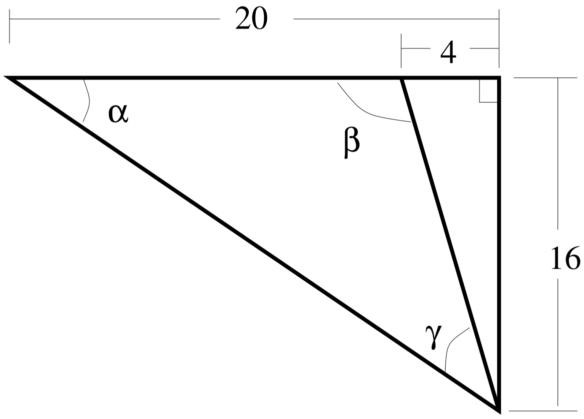
1. (7 points) Each circle below has radius 5 and the origin of the coordinate system is at the center. Find the angle θ in each of the three pictures below:







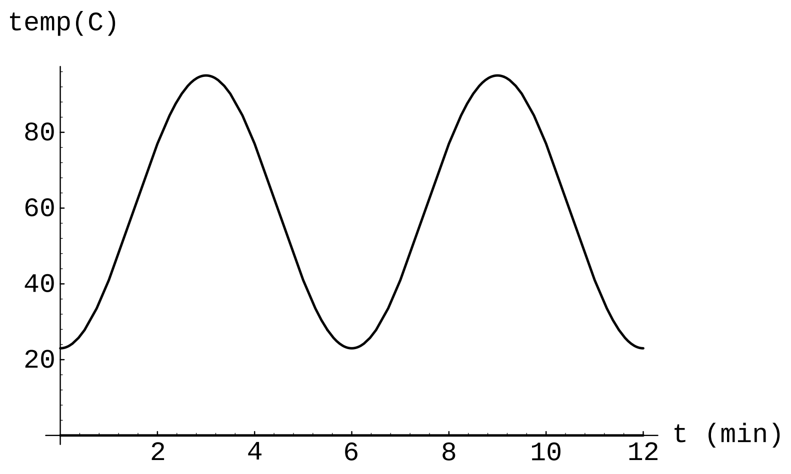
2. (7 points) Find the angles α, β, γ in the picture. (Note, The “square” indicates a right angle):



3. (6 points) A *thermal cycler* is a biotech machine which precisely varies the temperature of a very small chamber containing DNA samples. Suppose the temperature ^{o}C in the container at time t minutes is given by the function:

$$y = 36\cos(\frac{\pi}{3}t - \pi) + 59.$$

Here is a graph of this function for the first 12 minutes.



During the this 12 minute time period, find the total amount of time the DNA chamber has a temperature of at least 70^oC.