Math 120 D **Quiz 5** (30 minutes) Tuesday, November 19, 1997

Name _____ **Student number** _____ **Quiz section:** _____

Please **show your work** for full credit.

1. A bug crawls *clockwise* along a circle in the xy-plane with center $(4, 3)$ and radius 2 feet. The bug initially has x-coordinate of 3 and crawls at constant speed, taking 4 minutes to make one revolution. Find the x- and y-coordinates of the bug after t minutes elapsed (i.e., find parametric equations for bug's motion).

2. A bird flies at constant speed from 100 feet in front of a 20-foot tree to the top of the tree. The entire flight takes 20 seconds. At the instant that the bird begins its flight, a bee flies from the foot of the tree at 30° above the horizontal and at a constant speed of 32 feet/sec. [The x- and y-coordinates are the distance right of and the height above the foot of the tree.]

(a) Find the x- and y-coordinates of the bird after t seconds elapsed (i.e., find parametric equations for bird's motion).

(b) Find the x- and y-coordinates of the bee after t seconds elapsed (i.e., find parametric equations for bee's motion).

(c) Find the distance between the bird and the bee after t seconds elapsed.

(d) When are the bird and the bee closest?