

Directions: *Please show all of your work clearly. Full credit will only be given when work is clearly presented. Use appropriate labels and units.*

(10 points)

1a. Assume a blind dog starts running North at $10 \frac{\text{feet}}{\text{sec}}$. There is a circular swimming pool of radius 50 yards centered 70 yards North and 40 yards West of where the dog began running. Impose a coordinate system such that the starting location of the dog is the origin.

When and where does the dog fall in?

1b. Assume a bird flies in a straight line looking for its next “target”. As it passes through the point fifty feet East of the origin, it sees the dog fall into the pool and directs itself to fly directly over where the dog had fallen.

Model the path of the bird.

(6 points)

2. Find an equation of a circle passing through the point $(1,-2)$. Also find an equation of a line intersecting the circle at that point.

(4 points)

3. Find the distance between the points $(t, 1 - t)$ and $(2, 4)$.