EE 289 – Homework Chapter 2

1 You are given two sides of a triangle, a = 4.5 and b = 6. The angle between them is 35 degrees. Write a script to find the length of the third side and the area of the triangle.

2 In the bottom of the ninth inning, the bases are loaded and the Braves are down by three runs. Chipper Jones steps to the plate. Twice he swings and misses. The crowd heads for the exits. The next pitch is a fast ball down the middle. He swings and makes perfect contact with the ball, sending it up at a 45-deree angle forward the fence 400 ft away.
   a. Write a script to determine how fast he must hit the ball to land at the base of the fence, neglecting the air resistance.
   b. Perform a brief experiment to determine whether there was a better angle at which to hit the ball so that it could clear a 12 ft fence.

4 Write a script that validates the relationship between sin(θ), cos(θ), and tan(θ) by evaluating these functions at suitably chosen values of θ.

11 Your are given a circle with radius 5 centered at x=1, y=2. You want to calculate the intersection of some lines with that circle. Write a script to find the x and y coordinates of both points of intersection. You should test this code at least with these lines:

$$y = 2x - 1$$
$$y = -2x - 10$$
$$y = x + 5.9054$$