Worksheet 2.2

1. Wiley Coyote is chasing the Road Runner at a velocity of 50 m/s when he runs off a 50 m high cliff.
a. Draw a 2D motion diagram for the coyote.
b. How long does it take for Wiley to hit the ground?
c. What is his horizontal displacement?

2. A canon shoots a ball horizontally from a 70 m cliff with a velocity of 40 m/s.
a. What is the initial velocity of the ball in the y direction?
b. What is the total horizontal displacement of the ball?

3. A pool ball rolls off of a table 1.5 m tall and lands 5 m from the table.
a. Draw x vs t, y vs t, v_x vs t and v_y vs t graphs for the pool ball starting at the point it leaves the table.
b. What was the velocity of the ball when it left the table?
c. How long did it take for the ball to land?

4. A soccer ball is kicked from the ground with an initial velocity of 30 m/s. The ball travels 50 m. The ball lands 3 seconds later.
a. What angle was the ball kicked at?
b. What is the maximum height of the ball?
c. At what times is the ball at a height of 2 m?

5.   A field goal kicker strikes the ball 40 m from the goal posts. The ball leaves his foot with an angle of 40° with an initial velocity of 20 m/s. The goal posts are 3 m high. Assuming his kick is straight-on, does he make the field goal?