

Computer Assignment 1: Chapter 12/13 (Jordan)

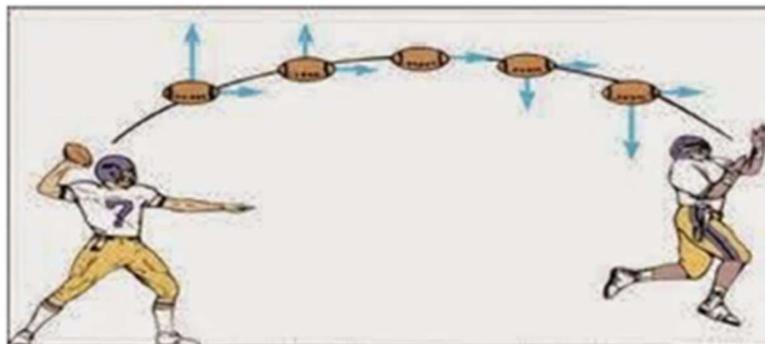
This assignment is to be completed using MATLAB. MATLAB should be available for Drexel students. There are some tutorials at <https://www.mathworks.com/products/matlab.html> The program is very straight forward to use.

If you have any specific questions about this assignment, please contact Jordan Stolle (Jts376@drexel.edu)

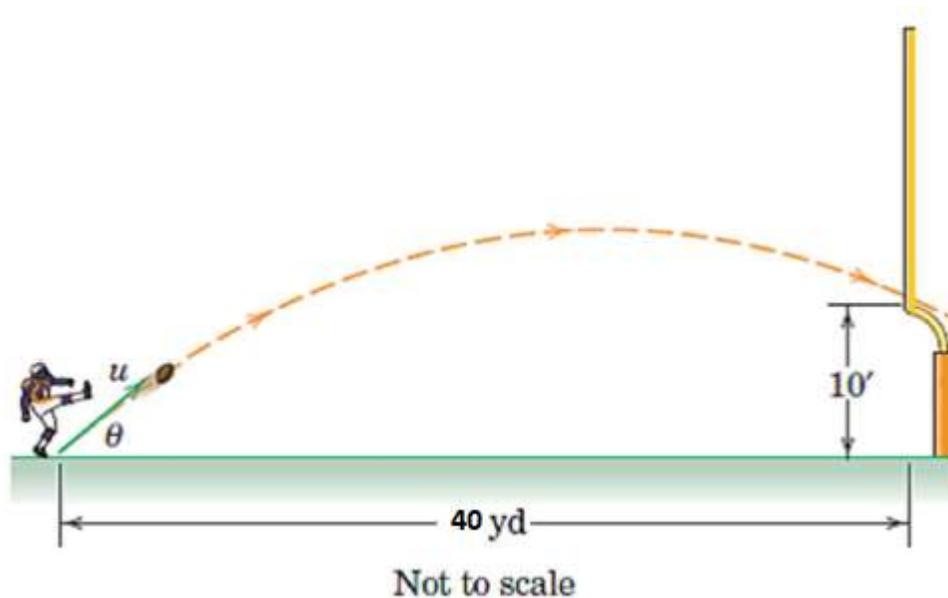
American Football Game

1. A quarterback drops back to throw a pass to his wide receiver. The quarterback throws the ball with an initial velocity of 50 miles per hour at an angle of 30 degrees above the ground. How many yards downfield will the wide receiver need to run to catch the ball as it lands? Plot the flightpath of the football with clear labeling.

2. Later in the game, the quarterback throws a pass to the wide receiver with a defender in hot pursuit. If the pass does not arrive to the wide receiver in two seconds, the pass will be intercepted. If the receiver is 30 yards away and the pass is thrown at a 10 degree angle from the ground, how fast must the ball be thrown to reach the receiver? If the fastest the quarterback can throw a football is 60 miles per hour, will the ball reach the receiver in time? Plot the flightpath of the football with clear labeling, and, if applicable, specifically show the location of the ball at $t = 2$ seconds.



3. At the end of the game, the field goal kicker attempts a 40 yard field goal to win. If the kick has an initial velocity of 50 miles per hour, at what angle must the kicker kick the ball in order for it to clear the goalpost? Plot the flightpath of the football with clear labeling.



SUBMISSION INSTRUCTIONS:

- Your submission should be one (1) zip folder uploaded to DrexelLearn.
- The folder should contain your MATLAB script and a PDF report with the answers and plots requested in the problem statement (above).
- Your MATLAB script, the PDF report, AND the folder should be named as follows: "LastName_FirstName_CA1_MEM238".
- Failure to follow the naming convention may result in a reduction of points.