Loops II

# Instructions

Complete the problems below by having MATLAB compute them sequentially from a .m file. Complete the assignment by posting a single .m file named appropriately to the D2L folder.

Now that you have learned how to use sections. Each problem should be in one .m file but separated by sections. Remember, if you want to use clc;clear;close all; statements for yourself that is fine, but YOU MUST COMMENT IT OUT before submitting.

# Problems

1. The flight of a model rocket can be modeled as follows. During the first 0.15s the rocket is propelled upward by the rocket engine with a force of 16N. The rocket then flies up while slowing down under the force of gravity. After it reaches the apex, the rocket starts to fall back down. When its downward velocity reaches 20 m/s, a parachute opens (assume it opens instantly), and the rocket continues to drop at a constant speed of 20 m/s until it hits the ground. Write a program that calculates and plots the speed (Figure 1: Velocity vs Time) and altitude (Figure 2: Altitude vs Time) of the rocket as a function of time during the flight. The plots should include titles and legends. The point at which the parachute opens should be indicated on the plot with a circle.
2. Write a program in a script file that creates an *n x m* matrix with elements that have the following values. The value of each element in the first row is the number of the column. The value of each element in the first column is the number of the row. The rest of the elements each has a value equal to the sum of the element above it and element to the lest. When executed, the program asks the user to enter values for *n* and *m*.