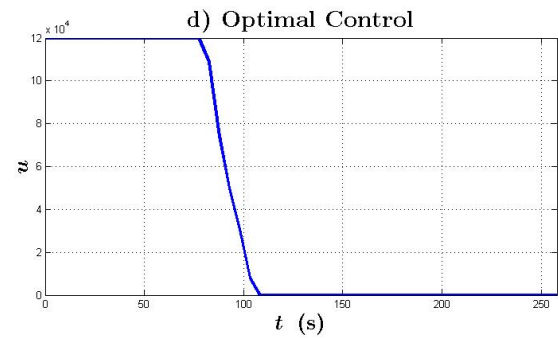
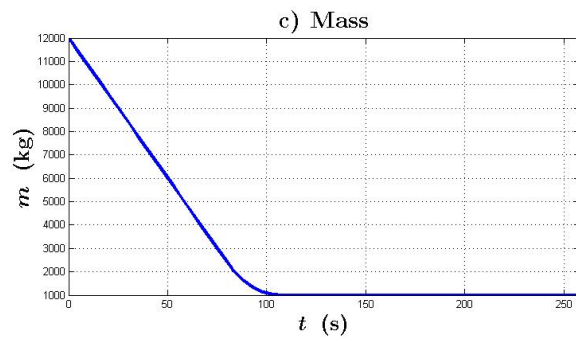
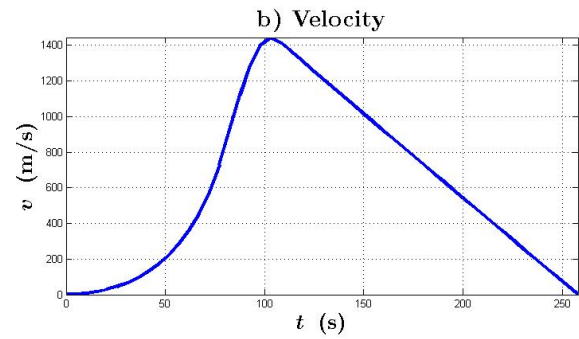
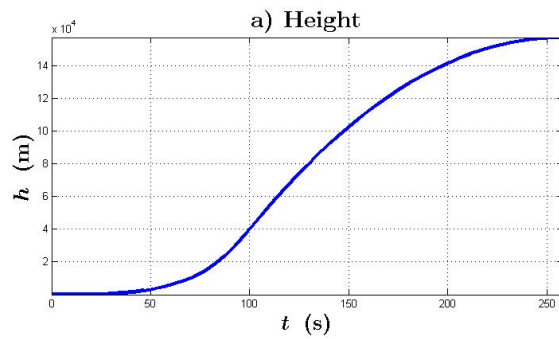


Problem 3

Part a

Following is the plot for the time evolution of the states and control subject to the trapezoidal rule direct method. Code attached on following pages.

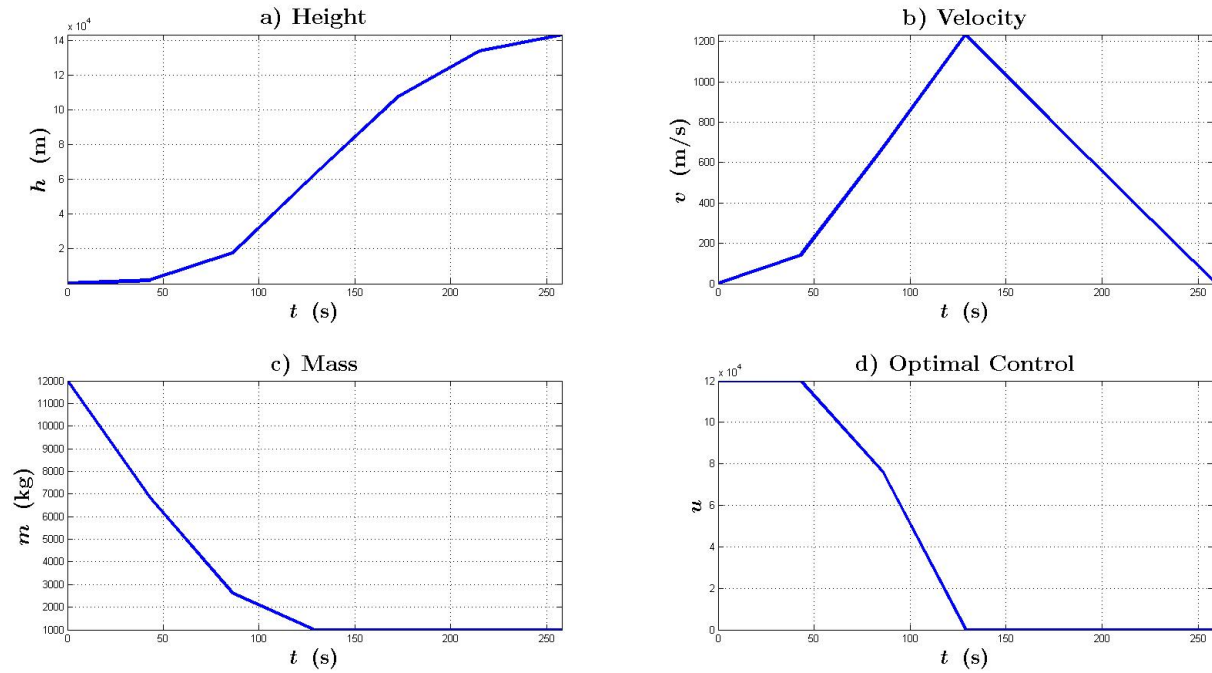


Part b

The minimum number of discretization points N required to get the MATLAB function using trapezoidal rule direct method to converge (with `exitflag = 1`) was **50**.

Part c

Following is the plot for the time evolution of the states and control subject to the Hermite-Simpson rule direct method.



The “cost” and “fdyn” functions remain unchanged. The code for the “collocation” and “constraint” functions are attached on following pages.

Part d

The minimum number of discretization points N required to get the MATLAB function using Hermite-Simpson rule direct method to converge (with `exitflag = 1`) was **6**.