MTH-326 MATH MODELING
SPRING 2025
Homework 1
Due Friday 02/07/2025

1. A free fall ball dropped from a 400-ft height cliff. Once the ball reaches the ground, it bounces.

(a) Plot the trajectory of the ball for the time period $0 \leq t \leq 50$ (sec) where the function $s(t)$ represents the height of the ball above the ground.
(b) Generate velocity $v(t)$ v.s. time plot.
(c) Consider the case when the initial velocity is 5 ft/sec, how does the trajectory look like?
(d) If we consider the air resistance force where the coefficient $k = 4$, how does the trajectory look like?

Note: Submit your MATLAB script and results on Brightspace.