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The matlab code is:

% Constants (as previously defined)

initial\_velocity = 390; % m/s

launch\_angle = 40; % degrees

caliber = 0.009; % m

mass\_of\_gun = 4; % kg

distance = 91; % m

g = 9.81; % m/s^2 (acceleration due to gravity)

% Convert launch angle to radians

launch\_angle = deg2rad(launch\_angle);

% Calculate time of flight

time\_of\_flight = (2 \* initial\_velocity \* sin(launch\_angle)) / g;

% Time vector

t = linspace(0, time\_of\_flight, 1000);

% Calculate x and y coordinates of the trajectory

x = initial\_velocity \* cos(launch\_angle) \* t;

y = initial\_velocity \* sin(launch\_angle) \* t - 0.5 \* g \* t.^2;

% Calculate velocity as a function of time

v = initial\_velocity - g \* t;

% Create a figure

figure;

% Plot velocity against time

subplot(2, 1, 1);

plot(t, v);

xlabel('Time (s)');

ylabel('Velocity (m/s)');

title('Bullet Velocity vs. Time');

grid on;

% Plot the trajectory

subplot(2, 1, 2);

plot(x, y);

xlabel('Horizontal Distance (m)');

ylabel('Vertical Distance (m)');

title('Bullet Trajectory');

grid on;