

Table 1: Velocity as a function of time

t (s)	$v(t)$ (m/s)
8	227.04
36	1004.597
65.75	1902.249
95.5	2799.901
125.25	3697.553
155	4595.205
184.75	5492.857

1.
 - a) Plot a Graph using Table 1. (Scatter Plots)
 - b) Find the velocity at $t=16$ seconds using the direct method for cubic interpolation and calculate absolute relative error (ϵ_a) using MATLAB.
 - c) Find the velocity at $t=16$ seconds using the Newton Divided Difference method for quadratic interpolation and calculate absolute relative error (ϵ_a) using MATLAB.
2. Consider the function $f(x) = 4x - 1 - \sin(x)$ on the interval $0 \leq x \leq 2$.
 - (a) Perform 13 iterations of the Bisection Method on $f(x)$ using the end-points of the interval as initial data. Show the new estimate x_n and $f(x_n)$ at each step.
 - (b) Perform 12 iterations of Newton's Method on $f(x)$ with the initial guess $x_0 = 1$. Show the new estimate x_n and $f(x_n)$ at each step.