

## Assignment

Command Window

clear

clc

format short

V = 0.5

m = 3.5

g = 9.8

F = m \* g

v = sqrt((C \* (F + (0.02 \* v)) \* (log(v) ^ 3)) + (10 \* v) + (7150) / 0.3);

for i = 1 : inf

for (i+1) = i

v(i+1) = sqrt(((F + (0.02 \* v(i)))) \* (log(v(i)) ^ 3) + (10 \* v(i)) + 7150 / 0.3);

Ea(i+1) = abs((v(i+1) - v(i)) / v(i+1)) \* 100;

if Ea(i+1) <= 1e-11

break

end

end

table = table(i, v, Ea)

Output

iter	v	Ea
0	0.5	0
1	239.05	99.791
2	294.17	18.736
3	302.61	2.7894
4	303.85	0.40992
5	304.04	0.060144
6	304.06	0.008822
7	304.07	0.0012941
8	304.07	0.00018981
9	304.07	0.7842 e <sup>-0.5</sup>
10	304.07	4.0838 e <sup>-0.6</sup>
11	304.07	8.7865 e <sup>-0.8</sup>
12	304.07	1.2888 e <sup>-0.8</sup>

Converging at iter = 7; v = 304.7

$$F_g = \frac{0.3v^2}{500 + (\ln v)^3} - 0.02v$$

$$\text{If } v = 304.07$$

$$\text{Recall } F_e = 9.8 \times 3.5 = 34.30$$

Substituting  $v = 304.07$

$$F_p = \frac{0.3 \times (304.07)^2}{500 + (\ln(304.7))^3}$$

$$F_p = 40.3826 - 6.60814$$

$$= \underline{\underline{34.3}}$$