

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 C(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(C{i}, v, Ea)

Output

Iter	v	Ea
0	0.5	0
1	239.05	99.741
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	$0.7842 e^{-0.5}$
10	304.07	$4.0838 e^{-0.6}$
11	304.07	$8.7865 e^{-0.8}$
12	304.07	$1.2888 e^{-0.8}$

Converging at iter = 7, v = 304.07

$$F_g = \frac{0.3v^2}{500 + (1nv)^3} - 0.02v$$

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

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

Substituting $v = 304.07$

$$F_p = \frac{0.3 \times (304.07)^2}{500 + (1n(304.7)^3)}$$

$$F_p = 40.8826 - 6.60814$$

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