

# ASSIGNMENT I

Command window

clear

clc

format short

V = 0.5

m = 3.5

g = 9.8

F = m \* g

V = sqrt(cc F + (0.02 \* V) \* ((log(V)^3) + (10 \* V) + 17150) / (0.3));

for P = 1 : 10

iter (i+1) = i

V(i+1) = sqrt(cc F + (0.02 \* V(i)) \* ((log(V(i))^3) + (10 \* V(i)) + 17150) / (0.3));

Eg(i+1) = abs(cc V(i+1) - V(i)) / (V(i+1) \* 100);

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

break

end

end

table = table(iter, 'V', 'Eg')

OUTPUT

iter	V	Eg
0	0.5	0
1	239.05	97.791
2	294.17	18.736
3	302.61	2.7894
4	303.35	0.40992
5	304.04	0.060144
6	304.06	0.008802
7	304.07	0.0012941
8	304.07	0.0008981
9	304.07	2.742e-05
		4.0833e-06

11	304.07	$8.7865e^{-0.8}$
12	304.07	$1.2888e^{-0.8}$
13	304.07	<del><math>2.7727e^{-10}</math></del> $1.8904e^{-0.9}$
14	304.07	$2.7727e^{-10}$
15	304.07	$4.0679e^{-11}$
16	304.07	$5.9635e^{-12}$

Converging at iter = 7 ;  $V = 304.07$   
 Prove

$$F_A = \frac{0.3V^2}{5001 + (fnV)^2}$$

If  $V = 304.07$

Recall  $F_A = 9.8 \times 3.5 = 34.30$

Substituting  $V = 304.07$

$$F_A = \frac{0.3 \times (304.07)^2}{5001 + (fn(304.07))^2} \approx 0.02(304.07)$$

$$F_A = 40.38195931 - 60.0814$$

$$F_A = 34.3$$