

Chionke dawudici  
171 Engol 1006  
Chemical Engineering

Command window

Clear

clc

format short

V = 0.5

m = 3.5

q = 9.8

F = m \* q

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

for i = 1 : inf

iter(i+1) = 1

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

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

If Ea(i+1) <= 1E-11

break

end

end

table = table('iter', '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	0.00044
6	304.06	0.0088222
7	304.07	0.0012941
8	304.07	0.00018981
9	304.07	2.782e-05
10	304.07	4.0888e-06
11	304.07	8.7865e-08
12	304.07	1.2888e-08
13	304.07	1.8904e-09
14	304.07	2.7827e-10
15	304.07	4.0679e-11
16	304.07	5.9635e-12

Converging of iter = 7;  $V = 304.07$

Prove

$$f_A = \frac{0.3V^2}{500 + (inV)^3} \quad 0.02V$$

$$500 + (inV)^3$$

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

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

$$\text{Substituting } V = 304.07$$

$$f_A = \frac{0.3 \times (304.07)^2}{500 + (in(304.07))^3}$$

$$500 + (in(304.07))^3$$

$$f_A = 40.38195931 - 600814$$

$$f_A = 34.3$$