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17Sci4002

Civil Engineering
Eng 582 (Assignment)

Command Window

clear

clc

format short

v = 0.5

m = 3.5

q = 9.8

f = 0.09

v = sqrt((ccf + 0.02*v) * ((log(x)^3)) + (10*v) +

17.0) / 0.3)

for i = 1:nf

(ter(Ci+1)) = 1

v(Ci+1) = sqrt(ccf + (0.02*v(Ci)) * ((log(x(Ci)))^3) + (10*v(Ci)) +

17.0) / 0.3);

Ea(Ci+1) = abs((ccf(Ci+1) - v(Ci+1)) * 100);

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

break

End

End

table = table(1: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	0.060144
6	304.06	0.008222
7	304.07	0.0012941
8	304.07	0.00018981
9	304.07	2.1842e-05
10	304.07	7.0838e-06
11	304.07	8.7865e-08
12	304.07	1.2888e-08
13	304.07	1.8904e-09
14	304.07	2.7121e-10
15	304.07	4.0679e-11
16	304.07	5.9635e-12

Converging at iter = 7 ; V = 304.07.
Proven

$$F_3 = 0.3V^3$$

$$500t(\ln V)^3$$

$$0.02V$$

$$V = 304.07$$

Recall

$$FD = \frac{0.3 \times (304.07)^2}{500^2 (\ln(304.07))^2} = 0.02 (304.07)$$

$$FD = 40.88195931 - 600814$$

$$FD = 34.3$$