

ENGINEERING MATHEMATICS

SANNI ABDURRAHMAN

CIVIL ENGINEERING

17/ENG03/050

ENG 382 ASSIGNMENT

DEF 81 21.400 0

Commandwindow 10.000 2

Clear 22.200 4

CIC 00000 40.400 2

format short 20.400 0

V = 0.50 40.400 7

18P m = 8.5 40.400 8

20- g = 9.8 40.400 9

20- f = m * g 40.400 01

20- $V = \text{sqrt} \left(\left(\left(f + (0.02 * v) \right) \left(\log(v)^3 \right) \right) + (10 * v) + 17150 \right)$

20- for i = 1:inf 40.400 51

20- iter [i+1] = i 40.400 81

01- $v(i+1) = \text{sqrt} \left(\left(\left(f + (0.02 * v(i)) \right) \left(\log(v(i))^3 \right) \right) + (10 * v(i)) + 17150 \right)$

51- $\epsilon_a(i+1) = \text{abs} \left(\left(\left(v(i+1) - v(i) \right) \right) / v(i+1) \right)$

15 $\epsilon_a(i+1) < = 1E-11$

break

end

table = table (iter, 'v', 'Ea')

OUTPUT

iter	V	ϵ_0
0	0.5	0
1	299.05	99.791
2	294.17	8.736
3	302.61	2.7894
4	303.85	0.40992
5	304.04	0.060144
6	304.06	0.0088222
7	304.07	0.0012941
8	304.07	0.00018981
9	304.07	$2.7842e^{-05}$
10	304.07	$4.0838e^{-06}$
11	304.07	$8.7865e^{-08}$
12	304.07	$1.2888e^{-08}$
13	304.07	$1.8904e^{-09}$
14	304.07	$2.7727e^{-10}$
15	304.07	$4.0679e^{-11}$
16	304.07	$5.9685e^{-12}$

Converging of Her = 7 ; $v = 304.07$

Prove

$$F_A = \frac{0.3v^2}{500 + (inv)^3} \quad 0.02v$$

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

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

Substituting $v = 304.07$

$$F_A = \frac{0.3 \times (304.07)^2}{500 + (304.07)^3} = 0.02(304.07)$$

$$F_A = 40.38195931 - 6.0814$$

$$F_A = 34.3$$