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17/ENG04/032
Electrical and Electronics Engg.

Assignment

Answer

```
Command window
clear
clc
format short
v = 0.5
m = 3.5
g = 9.8
F = m*g
v = sqrt((((f + (0.02*v) * (log(v)^3)) + (10*v) + 17150(0.3)
for q = 1:inf
i*q (i+1) = i
v (i+1) = sqrt((((F + (0.02*v(i)) * (log (v(i))^3) + (10*v(i)) +
    17150 (0)
Eq (i+1) = abs (((( + (i+1) - v(i)/v (i+1) * 100)
    if Eq(i+1) < = 1E-4
    break
    end
    end
table = table (iter, 'v' 'Eq')
```

Output

iter	v	Eq
0	0.5	0
1	239.05	97.771
2	294.17	18.736
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	2.7642e-05
10	304.07	4.0838e-06
11	304.07	8.7865e-05
12	304.07	1.2988e-08
13	304.07	1.8904e-09
14	304.07	2.7729e-10
15	304.07	4.0679e-11
16	304.07	5.9635e-12

Converging at $n = 7$; $v = 304.07$

Prove

$$F_A = \frac{0.3v^2}{500\,(\ln v)^3}$$

If $v = 304.07$

Recall $\Sigma A = 9.8 \times 3.5 = 34.30$

Substituting $v = 304.07$

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

$$F_A = 40.38195931 \div 600814$$

$$F_A = 34.3$$