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CNA 382 ASSIGNMENT

Command Window

clear

clc

Format float

v = 0.5

m = 3.5

g = 9.8

F = m * g

v = sqrt((L*(F + (0.02*v) * (log(v) * 3)) + (10 * v) + 17150)/0.3);

for i = 1 : 5

iter(i) = i

v(i+1) = sqrt((L*(F + (0.02*v(i)) * (log(v(i)) * 3)) + (10 * v(i)) + 17150)/0.3);

Ea(i+1) = abs((L*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	28.905	99.791
2	294.12	18.736
3	302.61	2.7894
4	303.85	0.40192
5	304.02	0.06944

iter	V	E_n
6	304.06	0.0088222
7	304.07	0.0012941
8	304.07	0.00018981
9	304.07	2.7842 e ⁻⁰⁵
10	304.07	4.0838 e ⁻⁰⁶
11	304.07	8.7865 e ⁻⁰⁸
12	304.07	1.288 e ⁻⁰⁸
13	304.07	1.8904 e ⁻⁰⁹
14	304.07	2.7727 e ⁻¹⁰
15	304.07	4.0679 e ⁻¹¹
16	304.07	5.9635 e ⁻¹²

Converting to iter $V = 304.07$

Power

$$P_D = \frac{0.3V^2}{500 \ln V^3} \quad 0.02V$$

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

$$\text{Recall, } P_D = 9.8 \times 8.5 = 34.30$$

Substituting $V = 304.07$

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

$$P_D = 40.3819531 - 6.0814$$

$$P_D = 34.3 //$$