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17HENG00102?
Computer Engineering
ENG1882

Assignment 1

Command window

```
clear
clc
format long g
v = 0.5
m = 3.5
g = 9.8
F = m*g
v = sqrt(((F + (0.002* v))(log(v)^3)) + (10*4) + (7150) / 0.3)
for i = 1 : inf
iter(i+1) = 1
v(i+1) = sqrt((F + (0.02 * v(i)) * (log v(i)) * 3) + (10 * v(i)) + 17150(0.3))
Ea(i+1) = abs((v(i+1) - v(i)) / v(i+1)) * 100 ))
if Ea(i+1) < = 1e11)
break
end
table = Table(iter, v; Ea')
```

Output	v	Ea
0	0.5	0
1	239.05	99.271
2	294.17	18.736
3	302.01	2.4894
4	303.85	0.40992
5	308.04	0.060144
6	304.04	0.008822
7	304.07	0.0012741
8	304.07	0.0008981
9	304.07	$2.484e^{-05}$

Output	v	Eq
10	304.07	$4.0838e^{-06}$
11	304.07	$8.7865e^{-08}$
12	304.07	$1.2858e^{-08}$

Converging at iter 1, v = 304.07

prove

$$\dot{\varepsilon}p = \frac{0.3v^2}{500+(\ln v)^3} = 0.02v \quad \text{-- (1)}$$

If v = 304.07

$$\text{RHS} = 98 \times 3.8 = 372.30$$

$$= 0.3 \times (304.07)^2 - 0.2(304.07)$$

putting v = 304.07 in eqn (1)

$$\dot{\varepsilon}p = \frac{0.5 \times (304.07)^2}{500 + (\ln(304.07))^3}$$

$$= 40.3816 - 6.0814$$

$$\dot{\varepsilon}p = 34.30$$