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MATRIC NO: 17/ENG02/1004
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ENG 382 Assignment I

Command Window

```
clear
clc
format short
v = 0.5
m = 35
g = 9.8
F = m*g
v = sqrt ((((CF + (0.02*v))*((log(v)^3)) + (10*v) + 17150)/0.3));
for i = 1:inf
  iter(i+1) = i
  v(i+1) = sqrt ((((CF+(0.02*v(i)))*(log(v(i)))^3) + (10*v(i))) + 17150
Ea(i+1) = abs(((v(i+1) - v(i))/v(i+1))*100);
if Ea(i+1) <= 1E-11
  break
end
end
table(iter', 'v', Ea')
```

Output

iter	v	ε_a
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	0.0088222

7	304.07	~~0.0088222~~ 0.0012941
8	304.07	~~0.0012941~~ 0.00018981
9	304.07	~~0.00018~~ 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	5.9635e-12

Converging of iter: 7, V = 304.07

proven

$$F_D = \frac{0.3V^2}{500 + (\ln V)^3} - 0.02V$$

if V: 304.07

Recall $F_D = 9.8 \times 3.5 = 34.30$

Substituting V: 304.07

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

F_D: 40.381959 31 − 600814

F_D: 34.3