

Assignment 1

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Soln

Command window

```
clear
```

```
format short
```

```
v = 0.5
```

```
m = 3.5
```

```
F = m - q
```

```
V = sqrt((C*(F + (0.02 + V)* (C*log(v)/n^3)) + C10 + v) + (17 + 50/0.3))
```

```
for q = 1:Inf
```

```
iter C(i) = 0
```

```
V(C(i)) = sqrt(C*(F + (0.02 + V(C(i))* (log(V(C(i)))/n^3)) + C10 + V(C(i)) + 17 + 50/0.3))
```

```
Eg(C(i+1)) = abs((C * V(C(i+1)) - V(C(i)) / V(C(i)) * 100));
```

```
if Eg(C(i+1)) <= 1E-11
```

```
break
```

```
end
```

```
end
```

```
table = table (iter, 'v' 'Eg')
```

Output

iter	v	Eg
0	0.5	0
1	239.05	97.791
2	294.17	18.736
3	302.61	2.7894
4	303.85	0.40992
5	304.04	0.0601244
6	304.06	0.0088222
7	304.07	0.0012941
8	304.07	0.00018981
9	304.07	2.742e-05
10	304.07	4.0833e-08

Iter	V	ϵ_a
11	304.07	$8.7866e-08$
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 : $w = 7$; $v = 304.07$

prove

$$f_A = 0.3v^2$$

$$500(\text{in})^3$$

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

$$\text{Recall } f_A = 2.8 \times 3.5 = 34.30$$

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

$$f_A = \frac{0.3 \times (304.07)^2}{500 + (\text{in.}(304.07))^3} = \cancel{0.02} \quad 0.02(304.07)$$

$$f_A = 40.38195931 - 600814$$

$$f_A = \underline{\underline{34.3}}$$