

Assignment 1

MATLAB CODE

```
clear all
```

```
clc
```

```
format short g
```

```
V=0.5;
```

```
for i=1:nf
```

```
V(i+1) = sqrt((57166.47) + (114.33 * ((log(V(i)))^3)) + (33.33 * V(i)) + (0.0007 * V(i) * log(V(i))^3));
```

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

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

```
break
```

```
end
```

```
end
```

```
Vinfo = [iter' V' Eg']
```

Vinfo	iter	V	Eg
	0	0.5	0
	1	239.05	99.791
	2	294.17	18.736
	3	302.61	2.7895
	4	303.85	0.40995
	5	304.04	0.060153
	6	304.06	0.0088241
	7	304.07	0.0052944
	8	304.07	0.0012044
	9	304.07	3.9635e-12

Converging at iter = 7, give $V = 304.07$.

Hence the converging value of the iteration was seen as 304.07

proof

$$I_D = \frac{0.3V^2}{500 + (173)} - 0.02V$$

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

$$\text{then } I_D = 0.8 \times 3.8 = 34.3$$

$$= \frac{0.3 \times (304.07)^2}{500 + (173)} - 0.02(304.07)$$

$$= 34.25$$

$$\approx 34.3$$

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