

Elect/Elect

Assignment 1.

Matlab code.

Command Window

Clear

clc

format long g

V=0.5

for i=1:100

iter(i)=i;

$$V(i+1) = \sqrt[3]{(500 + (\log(V(i)))^3) \cdot (3 + 3 + (0.020 \cdot V(2)))} / 0.3$$

$$ea(i) = \text{abs}(V(i+1) - V(i) / V(i)) \cdot 100;$$

if $ea(i) \leq 1E-11$

break

~~end~~ End

End

[iter 'v' ea]

Plot [v, iter]

axis tight

grid on

grid minor

Vector	iter	v	Er
	0	0.5	0
	1	239.05	99.791
	2	294.17	18.736
	3	302.16	2.7895
	4	303.85	0.409985
	5	304.04	0.060153
	6	304.06	0.0088241
	7	304.07	0.0012944
	8	304.07	0.0012944
	9	304.07	$0.9635e^{-12}$

Converging at iter = 7. give $v = 304.07$.

∴ the converging value is seen to be 304.07.

Proof is

$$Td = \frac{0.3v^2}{500 + (1.4v)^3} - 0.02v$$

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

$$d \delta_{en} Td = 0.8 \times 3.8 = 34.3$$

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

$$500 + (1.4 \times 304.07)^3$$

$$= 34.25$$

$$= 34.3$$