

GM GLAH KIRASEMG

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MECHATRONICS ENGINEERING

Assignment

Mat lab code

Command window

Clear

clc

format long g

V = 0.5

for i = 1:100

iter (i+1) = ii

$V(i+1) = \sqrt{0.5 + (\log(V(i)))^2} * (3e-3 + 0.02 * V(i))$

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

If $Ea(i+1) < = 1E-4$

break

end

[iter'v'ea']

plot[V,iter]

axis tight

grid on

grid minor

iter	V	Ea
0	0.5	0
1	234.05	99.791
2	294.17	18.736
3	302.16	2.7895
4	303.85	0.40945
5	304.04	0.060153
6	304.06	0.0088241
7	304.07	0.0012944
8	304.07	0.0012944
9	304.07	0.7635e-12

Converging at iter = 7 gives $V = 304.07$

∴ the converging value is seen to be 304.07

$$I_d = \frac{0.3V^2}{500 + (1.7304 - 0.07)^2} = 0.02V$$

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

$$\text{∴ } I_d = 0.02 \times 304.07 = 6.0814$$

$$= 0.02 \times (304.07)^2 = 0.2 (304.07)$$

$$500 + (1.7304 - 0.07)^2$$

$$= 34.25$$

$$= 34.3$$