

unmop Altem 0.

1/16/2023/016.

Civil Engr

Command window

Clear

clc

format short g

v = 0.5

~~m = 3.5~~

~~a = 9.8~~

for i = 1:100

iter (i+1) = i

v (i+1) = sqrt ((c sqrt ((log (v (i))) * 3) + (34.37 * 0.02 * v (2000)) / 0.3))

ea (i+1) = abs ((v (i+1) - v (i)) / v (i+1)) * 100;

if ea (i+1) <= 1e-11

break

end

[iter v ea]

Plot [v, iter]

axis tight

grid on

iter

0	0.5	0
1	239.05	99.791
2	294.17	18.736
3	302.16	2.7895
4	303.85	0.40995
5	304.06	0.000153
6	304.07	0.000001
7	304.07	0.0012944
8	304.07	0.0012944
9	304.07	0.9635e ⁻¹²

Converging at iter = 7 gives $v = 304.07$

The converging value is seen to be 304.07 . proving

$$Pd = \frac{0.3v^2}{50 + (20v)^2} = 0.024$$

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

$$\downarrow \text{Se. } T_0 = 9.8 \times 3.8 = 34.3$$

$$= 0.3 \times (30.4 \times 0.7)^2 - 0.2 (304.07)$$

$$= 0.3 \times (21.28)^2 - 0.2 (304.07)$$

$$= 34.25$$

$$= 34.3$$