

Matlab Code.

Command Window

clear

clc

format long

v = 0.5

for i = 1:100

$$v(i+1) = \text{sqrt}(((500 + (\log(v(i)))) * 3) * (34.3 + (0.020 * v(2)))) / 0.3)$$

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

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

break

end

[star, v, ea]

Plot [v, star]

axis tight

grid on

grid minor

Iter	v	ea
0	0.5	0
1	239.05	99.791
2	294.19	18.732
3	302.16	2.7895
4	305.85	0.4099
5	304.04	0.06053
6	304.06	0.002291
7	304.07	0.0012944
8	304.07	0.0012944
9	304.07	0.9435e-12

Converging at iter = 7 give $v = 304.07$

\therefore The converging value is seen to be 304.07

$$T_d = \frac{0.3v^2}{50 + (10v)^3} - 0.02v$$

if $v = 304.07$

$$T_{e,7} = 9.8 \times 88 = 34.30$$

$$= \frac{0.3 \times (304.07)^2}{50 + (10 \times 304.07)^3} - 0.2(304.07)$$

$$= 34.25$$

$$\stackrel{=}{=} 34.30$$

\curvearrowright