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Mechatronics Engineering
17/ENGOS/003
Assignment:

1. Matlas Code
Commanol window
clear
cle
format short g
V(1)=0.5
For i=100
Iter(i+1)=i;
V(i+1)=SQrt((c sqrt((log(V(i)))^3)+(34.3+(0.02*V(2)
Ea(i+1)=abs((V(i+1)-V(i))/V(i+1)))*100;
If Ea(i+1)<=1E-1
break
end
[Iter 'V' Ea']
plot[V, Iter]
axis tight
grid on
grid minor

Iter	V	Ea
0	0.5	0
1	239.05	9999
2	294.17	18.186
3	302.16	2.7895
4	303.85	0.40995
5	304.04	0.060153
6	304.06	0.0088241
7	304.07	0.0012944
8	304.07	0.0012944
9	304.07	$0.9633e^{-12}$

Converging at itr 7

$\Rightarrow 7$ gives $u = 304.07$

∴ the converging value is seen to be 304.07 m/s

$$Td = \frac{0.3u^2}{500 + (\ln u)^3} - 0.024$$

If $u = 304.07$

$Re_b = 1.8 \times 3.8 = 3e.7$

$$= \frac{0.3 \times (304.07)^2 - 0.2(304.07)}{500 - (\ln 304.07)^3}$$

$$= 34.25$$

$$= 34.3$$