

7	304.07	0.001294
8	304.07	0.00018931
9	304.07	$2.7842e^{-05}$
10	304.07	$4.0838e^{-06}$
11	304.07	$8.7865e^{-08}$
12	304.07	$1.2888e^{-08}$
13	304.07	$1.8904e^{-09}$
14	304.07	$2.7727e^{-10}$
15	304.07	$4.0679e^{-11}$
16	304.07	$5.9635e^{-12}$

Converging at iter = 7; $V = 304.07$

Prove:

$$F_A = \frac{0.3V^2}{500 + (\ln V)^3}$$

If $V = 304.07$

Recall $F_A = 9.8 \times 3.5 = 34.30$

Substituting $V = 304.07$

$$F_A = \frac{0.3 \times (304.07)^2}{500 + (\ln(304.07))^3} = 0.02(304.07)$$

$$F_A = 40.3819531 = 600814$$

$$F_A = 34.3.$$

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IT/ENGO1/080.

ENG 382 ASSIGNMENT

Question 1.

Command window

clear

clc

format short

v = 0.5

m = 3.5

q = 9.8

F = m * q

v = sqrt((F + (0.02 * v) * (log(v))^3) + (10 * v) + (17150 / (6.3)));

for q = 1:inf

iter(i+1) = i

v(i+1) = sqrt((F + (0.02 * v(i)) * (log(v(i)))^3) + (10 * v(i)) + (17150 / (10)))

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

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

break

end

end

table = table(iter, 'v', 'Eq')

OUTPUT

iter	v	Eq
0	0.5	0
1	239.03	97.791
2	294.17	18.736
3	302.61	2.7899
4	303.83	0.40992
5	304.04	0.060144
6	304.06	0.00882
7	304.07	0.001294