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**CHEMICAL ENGINEERING**

**17/ENG01/008**

**ENG 382 ASSIGNMENT1**

**SOLUTION TO QUESTION:**

FD =

And also, FD =mg

Therefore, mg=

Now, making V subject of the formula, we have;

V =

But in MATLAB ln (v)=log (V)

The new g(x) formed is V =

Also, this is checked **| g*’* (x) | >1**

But this g(x) is changed to y(x) in the coding so as not to cause confusion between the declared ‘g’ of 9.8m/s and the ‘g’ to be found.

Therefore, V = y =

MATLAB CODES:

commandwindow

clear

clc

format long

syms V

m=3.5;

g=9.8;

V(1)=0.5

err(1)=0;

relerr(1)=0;

tol=0.0000000001;

y=((0.3\*(V^2))/(0.02\*(500+log(V))))-(m\*g/0.02);

max1=10;

P(1)=1;

for i=2:max1

V(i)=subs(y,V(i-1));

err(i)=abs(V(i)-V(i-1));

relerr(i)=(err(i)/V(i))\*100;

if err(i)<tol|relerr<tol,break,end

P(i)=i;

end

fprintf('Iteration')

fprintf(' V')

fprintf(' Error')

fprintf(' Relative Error')

fprintf('\n')

y=[P',V',err',relerr'];

fprintf('%2.20f %20.20f %10.20f %10.0f\n',y')

length(V)

length(err)

OUTPUT:

V =

1/2

Iteration V Error Relative Error

1.00000000000000000000 0.50000000000000000000 0.00000000000000000000 0

0.00000000000000000000 -1714.99248958835869416362 1715.49248958835869416362 -100

ans =

2

ans =

2