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MATRIC NO: 17/SCI14/016

DEPT: CHEMICAL ENGINEERING

COURSE CODE: ENG 382

COURSE TITLE: ENGINEERING MATHEMATICS V

commandwindow

clearvars

clc

format short g

syms Kp Td Tp

muinat= xlsread('odevbesdata','data1');

t1=muinat(:,1);

Volume=muinat(:,2);

t0=ones(length(t1),1);

t=[t0 t1]

Kp=1

Td=1

Tp=1

Volume=Kp\*(1-exp(-(t1-Td)/Tp))

[mcoeff, mcoeffint, mresid, mresidint, manova] = regress(Volume,t)

mcoeff

Kp= round(muinat(900,2),1)

rsquaredvalue = manova(1)

new\_coeffs = regress(Volume,t)

commandwindow

clearvars

clc

format short g

muinat= xlsread('odevbesdata','data1');

t1=muinat(:,1);

Volume=muinat(:,2);

t0=ones(length(t1),1);

t=[t0 t1]

initials= [1,1];

modelfun=@(mcoeff,t) (mcoeff(1)\*(1-exp(-(t1-mcoeff(2)))));

[mcoeff, mcoeffint, mresid, mresidint, manova] = nlinfit(t1,Volume,modelfun,initials)

mcoeff

Kp= round(muinat(900,2),1)

rsquaredvalue = manova(1)

new\_coeffs = nlinfit(t1,Volume,modelfun,initials)

figure(1);

plot(t,Volume(:,1),'-r')

xlabel('Time (min)')

ylabel('Volume(Litre)')

legend('Comparison between experimental and linearized model data')

grid on

grid minor

axis tight

figure(2);

plot(t,Volume(:,1),'-b')

xlabel('Time (min)')

ylabel('Volume(Litre)')

legend ('Comparison between experimental and nonlinear model data')

grid on

grid minor

axis tight

figure(3);

plot(t,Volume)

xlabel('Time (min)')

ylabel('Volume(litre)')

legend ('Comparison between experimental,linearized model and nonlinear model data')

grid on

grid minor

axis tight