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EEE 382 ASSIGNMENT

```
commandwindow
clearvars
clc
close all
format short g
syms t Kp Td Tp x

%Linearized
v= Kp*(1-exp(-(t-Td)/Tp))
Jay=xlsread('1587203818odevbesdata','data1');
t1=Jay(:,1);
v=Jay(:,2);
V=round(mdata(900,2),1);
t0=ones(length(v),1);
t=[t0 t1];
[mcoeff, mcoeffint, mrseid, mresidint, manova]=regress(v,t1);
mcoeff
manova
Kp=V
Td=-mcoeff(1)
Tp=mcoeff(2)

figure(1)
plot(t1,v)
hold on
plot(t1,V)
grid on
grid minor
xlabel('Time (min)')
ylabel('Volume (m^3)')
legend('Experimental','Linearized')

%non-linear
ig=[0.1,0.1,0.1,0.1];
modelfun=@(v,t) ig(1)*(1-exp(-((ig(2)-ig(3))/ig*4))));
fred=nlinfit(t1,v,ig,modelfun)
figure(2)
plot(t1,v)
hold on
plot(t1,fred)
grid on
grid minor
xlabel('Time (min)')
ylabel('Volume (m^3)')
legend('Experimental','Nonlinear')
```

```

%comparing
figure(3)
plot(t1,v)
hold on
plot(t1,)
hold on
plot(t1,fred)
grid minor
grid on
xlabel('Time (min)')
ylabel('Volume (m^3)')
legend('Experimental','Linearlized','Nonlinear')

```

```

%SAE
[v,t1]=simplefit_data1;
net=fitnet(10,'trainscg');
net.performFcn='sae';
net=train(net,x,t)
y=net(x)
e=t1-y
perf=sae(net,t,y)

```

```

%MAE
y=net(v)
e=t-y
perf=mae(e)

```

```

%SSE
[v,t1]=simplefit_data1;
net=fitnet(10);
net.performFcn='sse';
net=train(net,x,t)
y=net(x)
e=t1-y
perf=sse(net,t,y)

```