

ENG 382 ASSIGNMENT 5

ONDUTIMI ZIDAFAMOR

17/ENG03/060

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

Linearized

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

```
figure(1)
plot(t1,v)
hold on
plot(t1,V)
grid on
grid minor
xlabel('Time')
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)));
Gele =nlinfit(t1,v,ig,modelfun)
figure(2)
plot(t1,v)
hold on
plot(t1,Gele)
grid on
grid minor
xlabel('Time')
ylabel('Volume(m^3)')
legend('Experimental','Nonlinear')
```

%comparing

```
figure(3)
plot(t1,v)
```

```
hold on
plot(t1,V)
hold on
plot(t1,Gele)
grid minor
grid on
xlabel('Time')
ylabel('Volume(m^3)')
legend('Experimental','Linearized','Nonlinear')
```