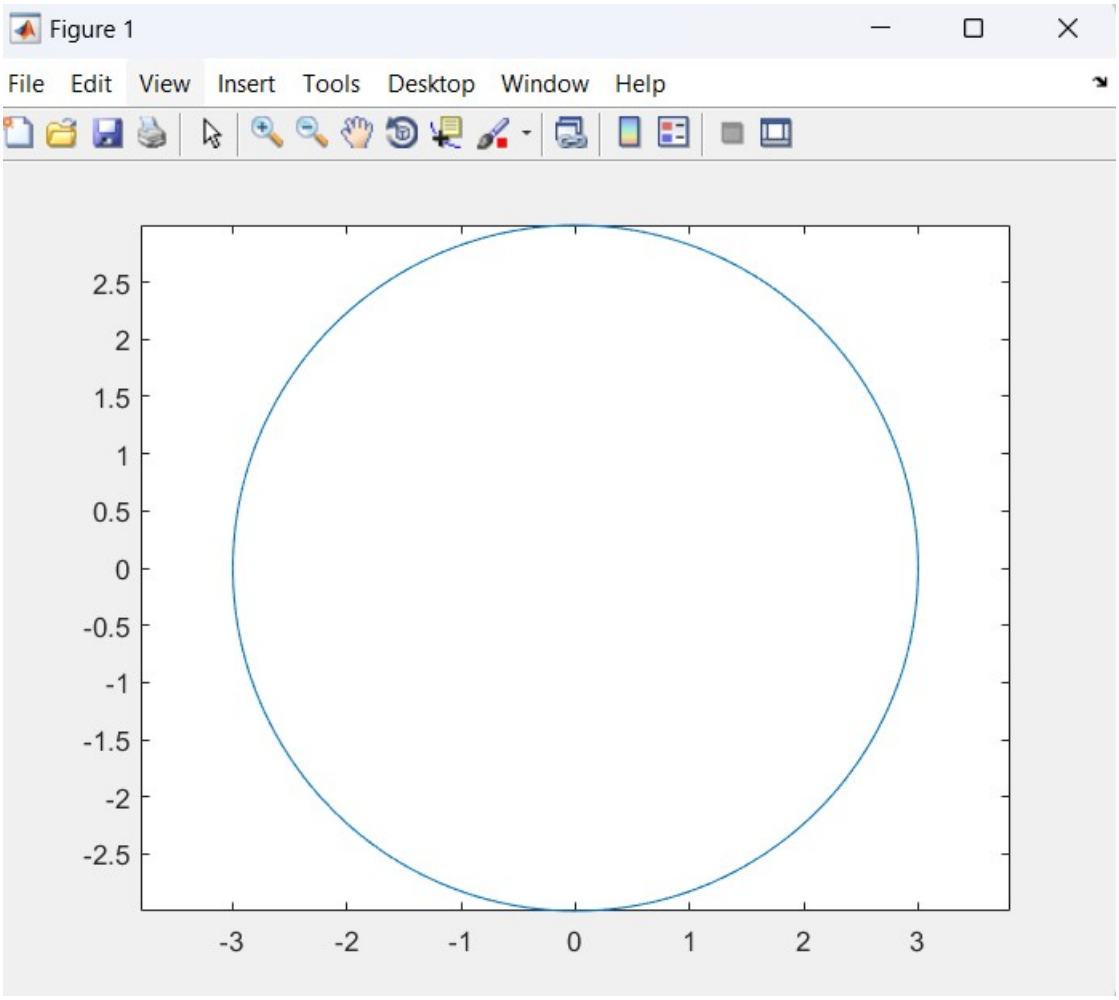
Bài tập về nhà _Hoàng Đông Tuấn B20DCVT334

Bài 19:

```
r = 3; % Bán kính
theta = linspace(-2*pi,2*pi,180);% Bi?u di?n góc trong t?
a ?? c?c
x = r*cos(theta);% Bi?u di?n x trong t?a ?? c?c
y = r*sin(theta);% Bi?u di?n y trong t?a ?? c?c
plot(x,y);
axis equal sprintf('dien tich hinh tron la:')
dt = pi*r^2
sprintf('chu vi hinh tron la:')
chuvi=2*pi*r
```

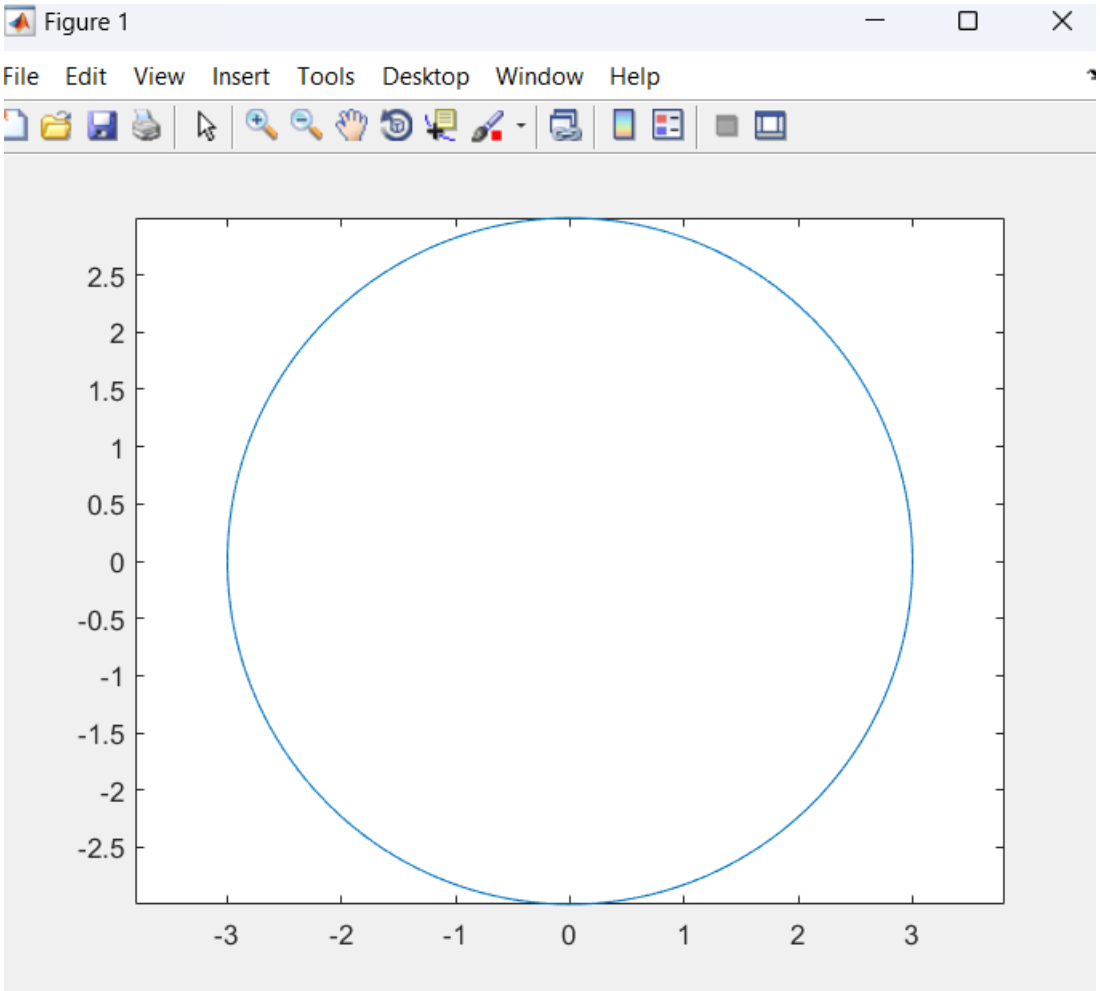


Bài 20:

```
r = 3;
theta = linspace(-2*pi,2*pi,180);
x = r*cos(theta);
y = r*sin(theta);
plot(x,y);
```

```
axis equal
dt = pi*r^2;
sprintf('dien tich hinh tron la: %0.5f',dt)
chuvi=2*pi*r;
sprintf('chu vi hinh tron la:%0.5f', chuvi)
```

```
>> Bai20

ans =

dien tich hinh tron la: 28.27433


ans =

chu vi hinh tron la:18.84956
```



Bài 21:

```
function Fun = Bai21(a,b);
```

```
fa =-inf;
fb = inf;
while (b-a)> eps*b x = (a+b)/2;
    fx = x^3/3 + 4*x^2 + x - 6;
    if sign(fx)==sign(fa) a=x;
        fa=fx;
    else b=x;
        fb=x;
    end;
end
disp('Nghiem cua phuong trinh la : ')
x
end
```

```
>> a=3

a =

     3

>> b=4

b =

     4

>> Bai21(a,b)
Nghiem cua phuong trinh la :

x =

    3.0000
```

Bài 22:

```
function dt= bai22(a,b,N,f)
%a=-1.5;
%b=1.5;
%N=100;
% fx = @(x)4*x^3*2*exp(x)*cos(x)
h=(b-a)/N;
x=zeros(1,N);
dtn=zeros(1,N);
x(1)=a;
%dt=0;
for i = 1:N
```

```
    dtn(i)= h*f(x(i)));
    x(i+1)= x(i) + h;
    dt=dt + dtn(i);
end
dt=sum(dtn(i);
```

```
tp =

    9.2173
```

Bài 23:

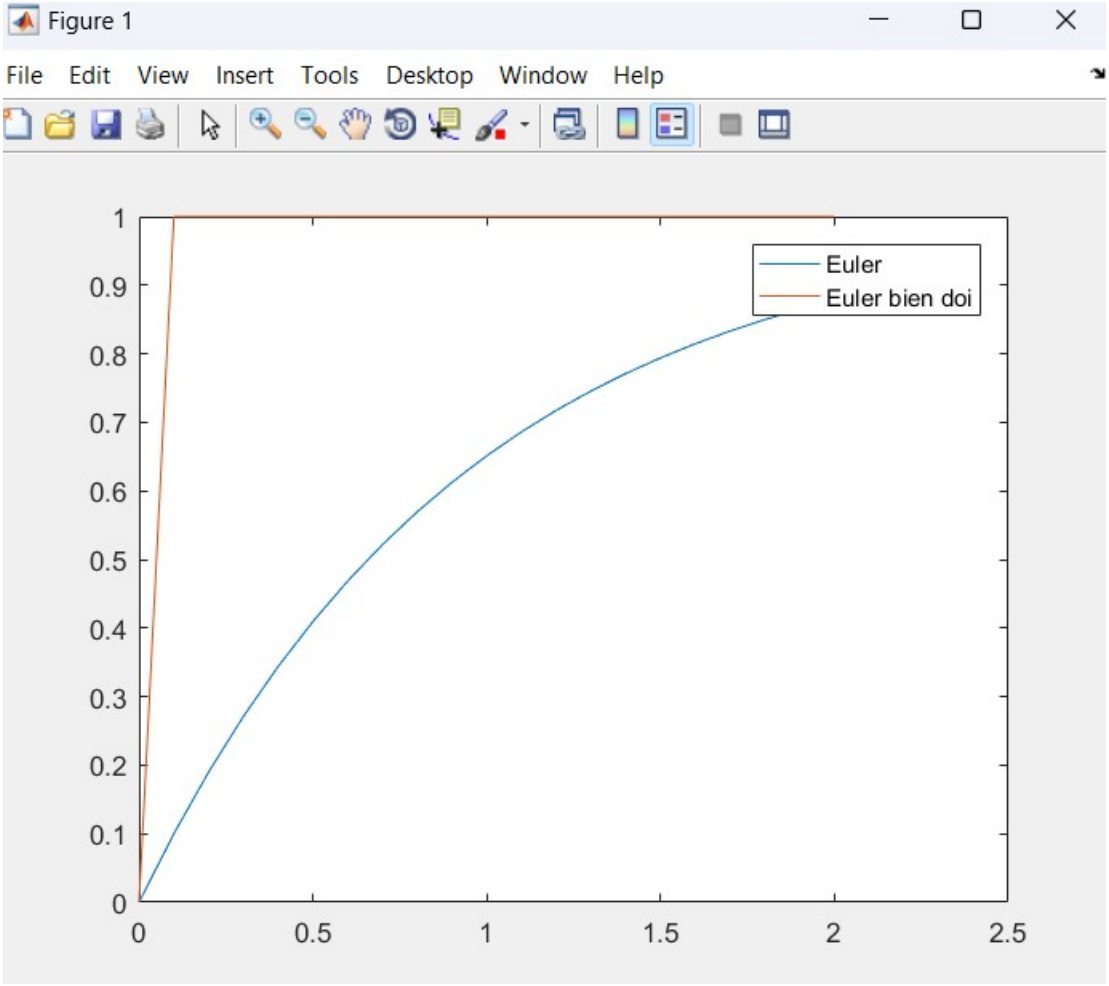
```
x0=2;
x1=1.5;
while(x0-x1)> 0.0001
    x0 = x1;
    x1 = (x0^2+2)/(2*x0)
end;
disp('Gia tr? can bac 2 cua a tinh theo pp gan dung la:
')
x1
```

```
>> Bai23

x1 =

    1.4167


x1 =

    1.4142


x1 =

    1.4142

Gia tr? can bac 2 cua a tinh theo pp gan dung la:

x1 =

    1.4142
```

Bài 24:

```
h=0.1;
```

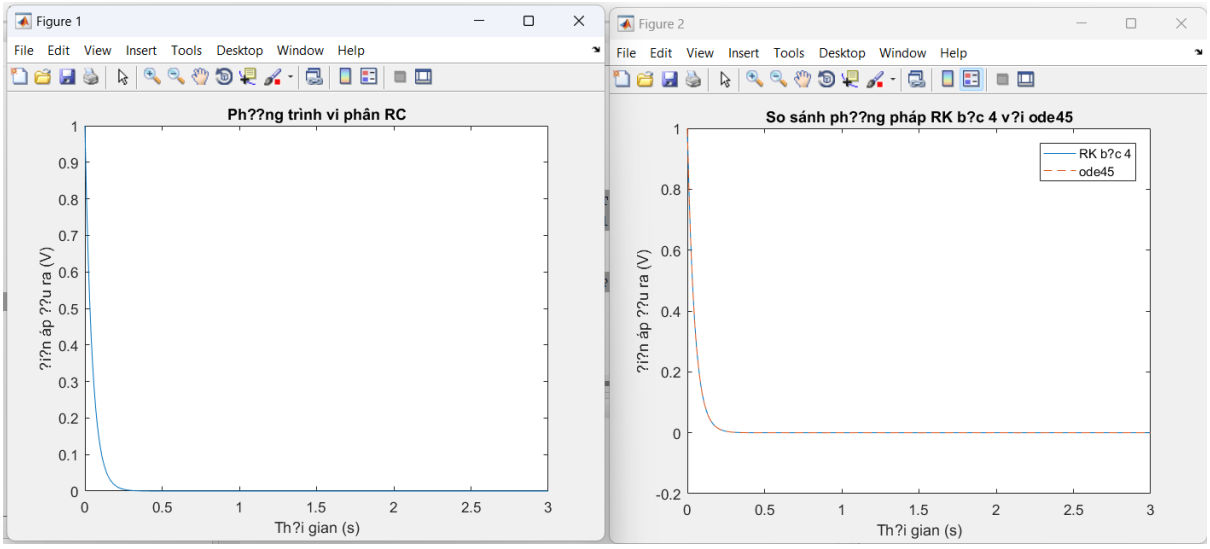
```
x0=0;
xN=2;
y0=0;
N=(xN-x0)/h;
%ydot=1-y
x=zeros(1,N+1);
y=zeros(1,N+1);
ybd=y;
x(1) =x0;
y(1) =y0;
ybd(1)=0;
for i=1:N
    x(i+1)=x(i)+h;
    y(i+1)=y(i)+h*(1-y(i));
    ybd(i+1)=y(i)+h*(1-y(i))+(1-y(i+1));
end
plot(x,y,x,ybd)
legend('Euler','Euler bien doi')
```



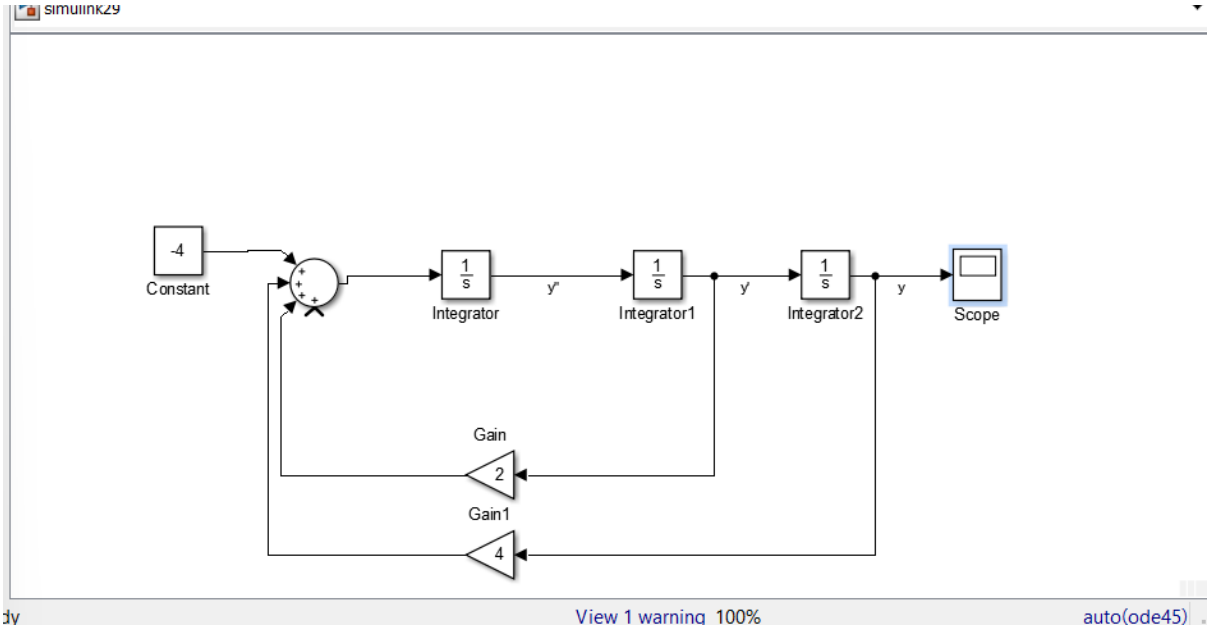
Bài 27:

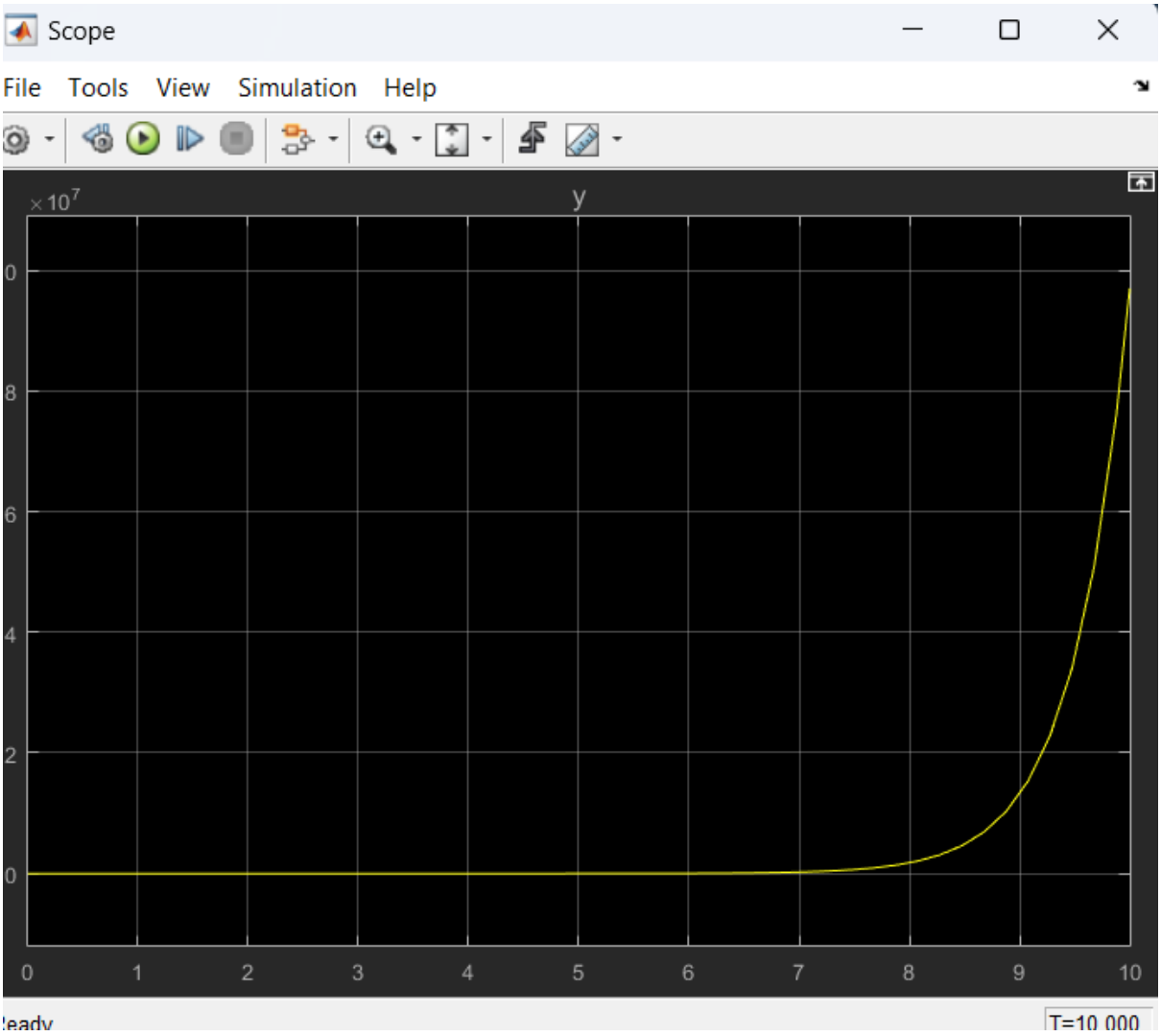
```
% Khai báo các thông s?
R = 10000;
```

```
C = 4.7e-6;
h = 0.01;
t = 0:h:3;
N = length(t);
u = zeros(1, N);
u(1) = 1;

% Ph??ng pháp RK b?c 4
for i = 1:N-1
    k1 = (-1/(R*C))*u(i);
    k2 = (-1/(R*C))*(u(i)+(h/2)*k1);
    k3 = (-1/(R*C))*(u(i)+(h/2)*k2);
    k4 = (-1/(R*C))*(u(i)+h*k3);
    u(i+1) = u(i)+(h/6)*(k1+2*k2+2*k3+k4);
end

% V? ?? th?
plot(t, u)
title('Ph??ng trình vi phân RC')
xlabel('Th?i gian (s)')
ylabel('?i?n áp ??u ra (V)')

% So sánh v?i nghi?m c?a ode45
options = odeset('RelTol', 1e-4, 'AbsTol', 1e-4);
[t_ode45, u_ode45] = ode45(@(t, u) (-1/(R*C))*u, [0 3],
1, options);
figure;
plot(t, u, t_ode45, u_ode45, '--')
title('So sánh ph??ng pháp RK b?c 4 v?i ode45')
xlabel('Th?i gian (s)')
ylabel('?i?n áp ??u ra (V)')
legend('RK b?c 4', 'ode45')
```

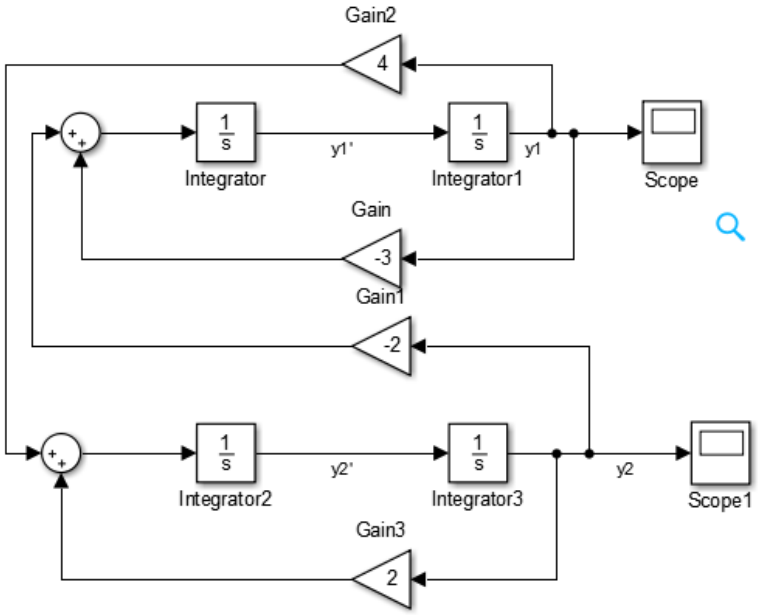


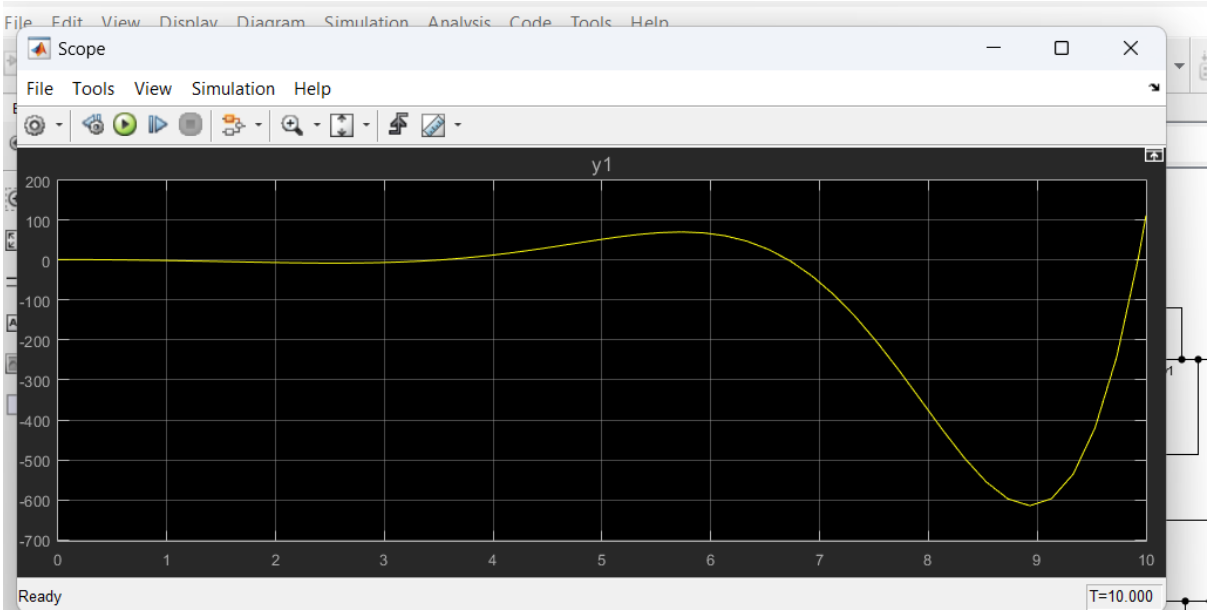
Bài 29

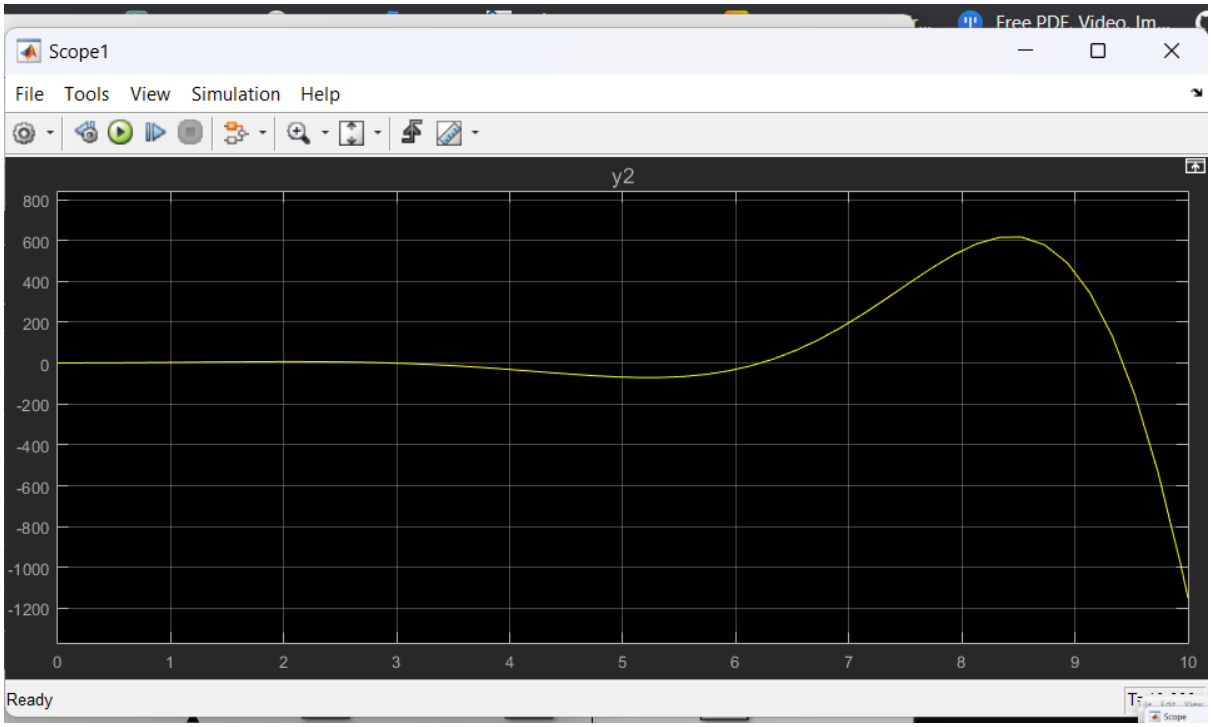

simulink29
-4
Constant
1/s
Integrator
y''
Integrator1
y'
Integrator2
y
Scope
Gain
2
Gain1
4
View 1 warning 100%
auto(ode45)


Scope
File Tools View Simulation Help
×10^7
y
0
8
6
4
2
0
0 1 2 3 4 5 6 7 8 9 10
T=10.000

Bài 30


Gain2
4
1
s
Integrator
y1'
1
s
Integrator1
y1
Scope
Gain
-3
Gain1
-2
1
s
Integrator2
y2'
1
s
Integrator3
y2
Scope1
Gain3
2


Scope
File Tools View Simulation Help
y1
200
100
0
-100
-200
-300
-400
-500
-600
-700
0 1 2 3 4 5 6 7 8 9 10
Ready
T=10.000


Scope1
File Tools View Simulation Help
y2
800
600
400
200
0
-200
-400
-600
-800
-1000
-1200
0 1 2 3 4 5 6 7 8 9 10
Ready