HW03 - Q03b - System

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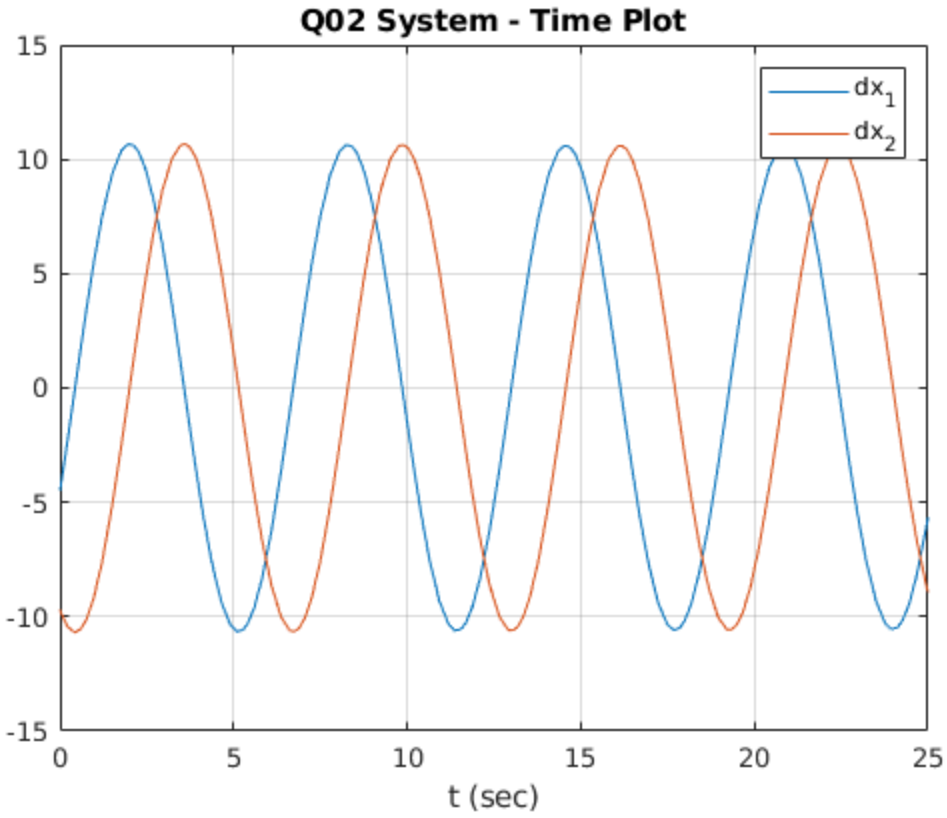
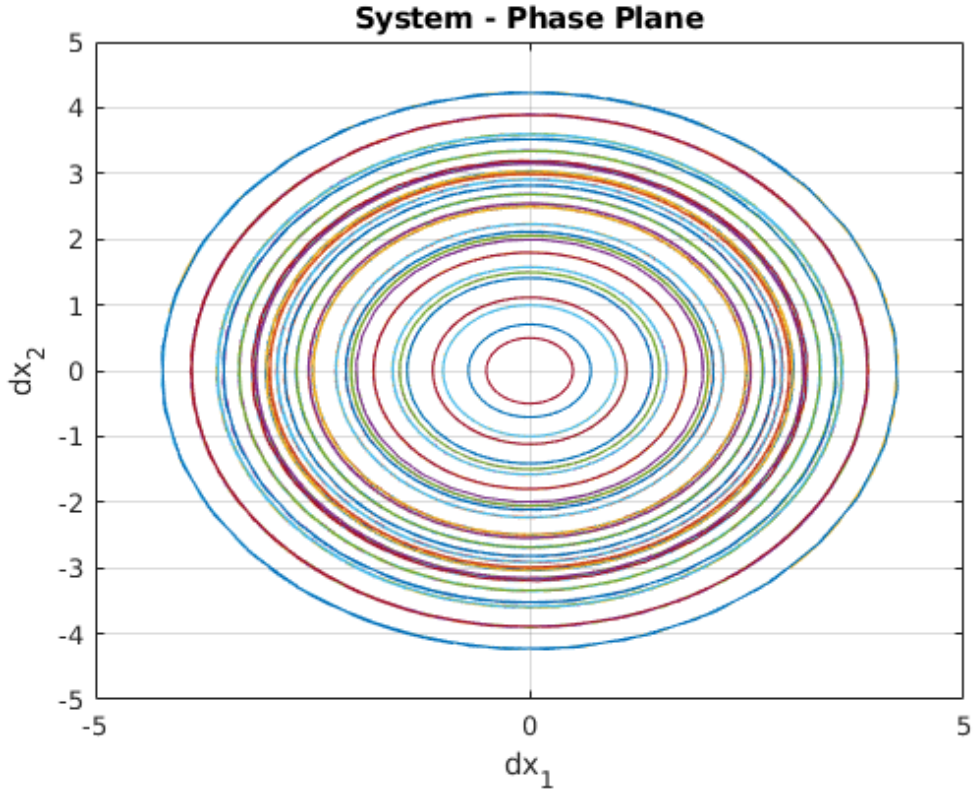
```
clc
close all
%warning('off','all')
%warning

x0_set = -3:.5:3;
t_intv= [0 25];
x_0= [-4.5; -9.7]; % initial conditions for x(t)
%t = t_intv;

figure
[t, x] = ode23(@System, t_intv, x_0);
plot(t,x)
hold on;
grid on;
title('Q02 System - Time Plot');
xlabel('t (sec)');
legend('dx_1', 'dx_2');

t_intv= [0 10];
figure
for i=x0_set
  for j=x0_set
    x0 = [i; j];
    [t,x]= ode45(@System, t_intv, x0);
    plot(x(:,1),x(:,2))
    hold on;
  end
end
title('System - Phase Plane');
ylabel('dx_2');
xlabel('dx_1');
axis([-5 5 -5 5]);
grid on;
```


Q02 System - Time Plot
dx1
dx2
15
10
5
0
-5
-10
-15
0
5
10
15
20
25
t (sec)


System - Phase Plane
5
4
3
2
1
0
-1
-2
-3
-4
-5
dx2
-5
0
5
dx1

function xdot = System(t,x) xdot = [-x(2); x(1)]; end

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