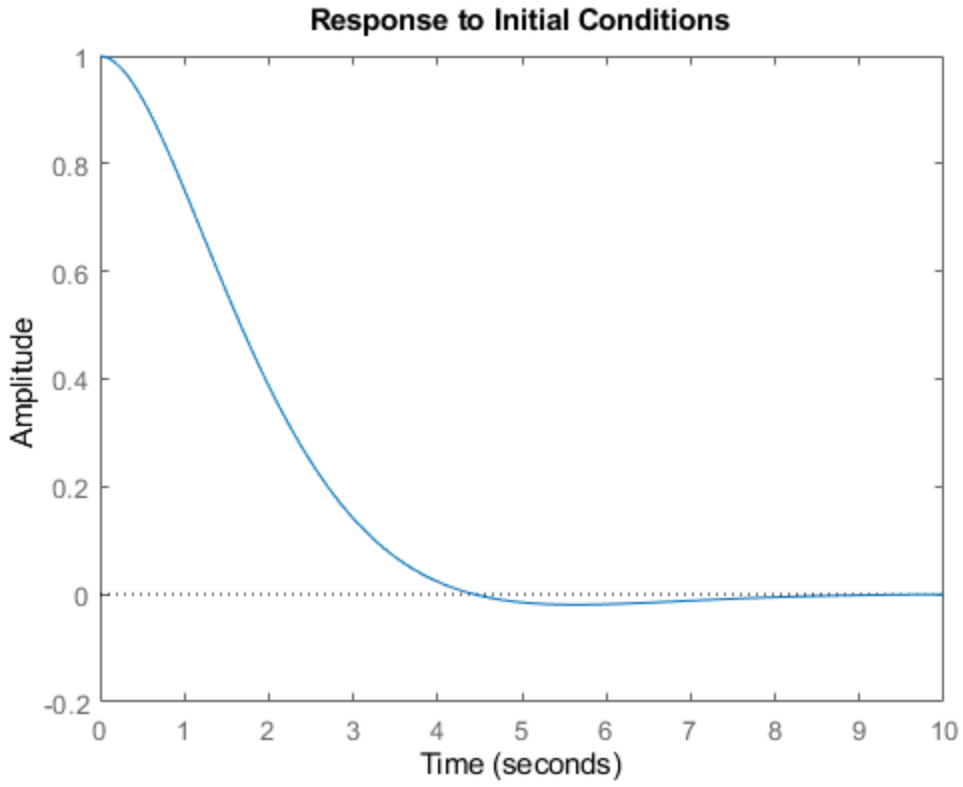
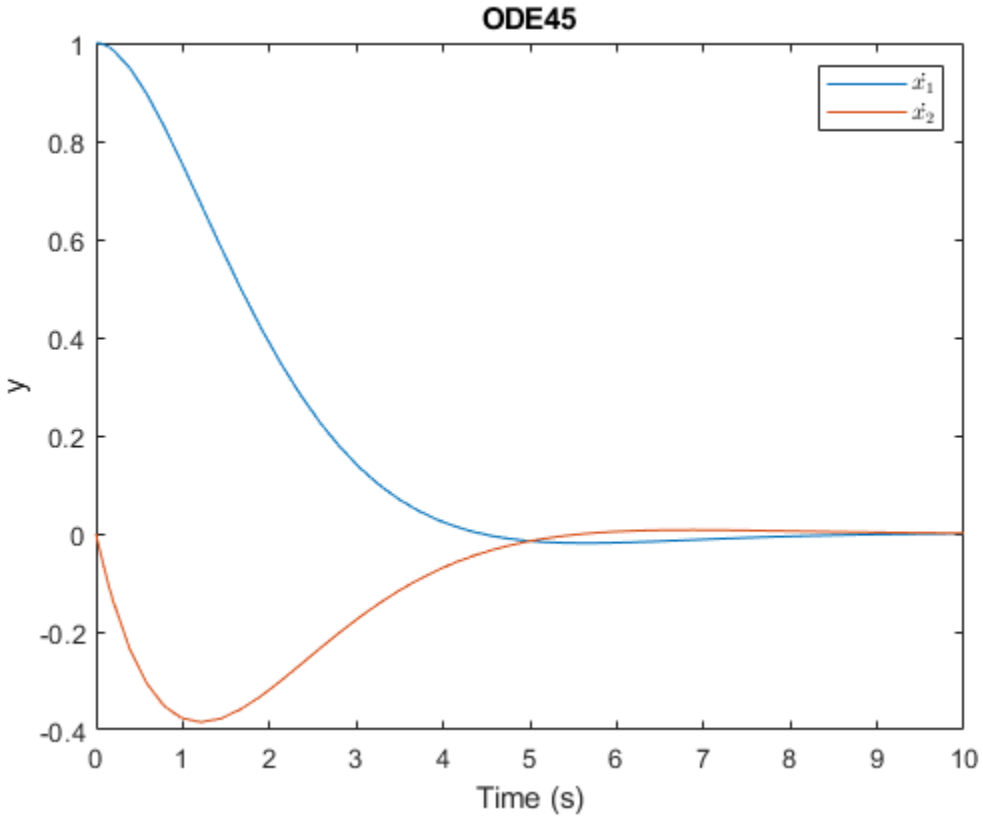
```
clc; clear all

% make matrices for vals
A = [0 1; -4/5 -7/5];
B = [0; 1/5];
C = [1 0];
D = [0];

% create sys
sys = ss(A, B, C, D);

% set initial conditions
x0 = [1 0];

% plot response
figure(1)
initial(sys, x0);

clc; clear all

% call ode45
[t, y] = ode45(@xdot_prob, [0, 10], [1, 0]);
figure(2)
plot(t, y)
title("ODE45");
xlabel("Time (s)"); ylabel("y"); legend("$\dot{x_{1}}$", "$
\dot{x_{2}}$", "interpreter", "latex")

% function for ODE
function xdot = xdot_prob(t, x)
    xdot = [x(2); -4/5*x(1)-7/5*x(2)];
end
```


Response to Initial Conditions
Amplitude
Time (seconds)
1
0.8
0.6
0.4
0.2
0
-0.2
0
1
2
3
4
5
6
7
8
9
10


ODE45
y
Time (s)
$\dot{x}_1$
$\dot{x}_2$
1
0.8
0.6
0.4
0.2
0
-0.2
-0.4
0
1
2
3
4
5
6
7
8
9
10

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