

Problem 9.41:

41. Consider the following equation.

$$5\ddot{y} + 2\dot{y} + 10y = f(t)$$

- Plot the free response for the initial conditions $y(0) = 10$, $\dot{y}(0) = -5$.
- Plot the unit-step response (for zero initial conditions).

```
% Problem 9.41
```

```
clc  
clear  
disp('Problem 9.41: Scott Thomas')
```

```
A = [0 1; -10/5 -2/5]  
B = [0; 1/5]  
C = [1 0]  
D = 0  
sys = ss(A, B, C, D);  
x0 = [10, -5]  
figure  
initial(sys,x0)  
figure  
step(sys)
```

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A =

```
0    1.0000  
-2.0000 -0.4000
```

B =

```
0  
0.2000
```

C =

```
1    0
```

D =

```
0
```

x0 =

```
10    -5
```

