MATLAB R2022b - academic use

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Live Editor - C:\Users\sethr\OneDrive\Desktop\ECEN380\Homework\Homework 6\state_variable_description_problem294...

problem_2_point_86.mlx | lab2_matlab.mlx | state_variable_description_problem294.mlx *

z_2[n] = 2q_1[n].

Repeat Part (a) for the transformed system.

Clarification from assignment module:

Typo Fix: z1[n] = q1[n] + q2[n] and z2[n] = 2q1[n]-q2[n]

Part (a)

```
A = [1/2, -1/2; 1/3, 0];
b = [1; 2];
c = [1, -1];
D = 0;
n = 0:29;
u = ones(1,30);

subplot(2, 1, 1);
sys = ss(A,b,c,D,-1);
h = impulse(sys,30);
stem(n, h(1:30),'filled','Color','r') % First 30 of impulse response
title('Impulse Response');
xlabel('n');
ylabel('h[n]');
grid on;

subplot(2, 1, 2);
s = lsim(sys, u); % Step response
stem(n, s(1:30),'filled','Color','r') % First 30 of step response
title('Step Response');
xlabel('n');
ylabel('s[n]');
grid on;

sgtitle('\underline{System Impulse/Step Responses}', 'Interpreter', 'latex'); % Overall Title
```

Name: a A b c D h n s sys u

Zoom: 80% UTF-8 LF script Ln 1 Col 1

Figure

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