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% MAE488_Nicholas_Hawse_HW4
% MAE 488 03 Analisis of ANALY ENGINEERING SYSTEMS
% Homework 4
% Nicholas Hawse
% 1/20/2025
% This code finds and plots solutions to the problems in HW 4

clear
clc
close all

fprintf('=====
\n')
fprintf('MAE 488, Homework # 4, Spring 2025\n')
fprintf('=====
\n')
fprintf('\n\n')

% =====
% Problem 3
% =====
% Plot the transfer function step resopnce as a function
% of time
%
fprintf('===== \n')
fprintf('Problem 3 Part d\n')
fprintf('===== \n')
fprintf('This code plots the transfer function x1 step resopnce\n')
fprintf('see the figure below\n\n\n\n\n')

sys1 = tf([1 0 100],[1 0 550 0 15000]); %creates the transfer function
figure(1)
stepplot(sys1,[0 10]); % finds and plots the responce to a unit step
xlabel('t');
ylabel('x (meters)');
title('MAE 488, Homework 4, Problem 3, Part d')

fprintf('===== \n')
fprintf('Problem 2 Part h\n')
fprintf('===== \n')
fprintf('This code plots the transfer function of x2 step resopnce\n')
fprintf('see the figure below\n\n\n\n\n')

sys2 = tf([100],[1 0 550 0 15000]); %creates the transfer function
figure(2)
stepplot(sys2,[0 10]); % finds and plots the responce to a unit step
xlabel('t');
ylabel('x (meters)');
title('MAE 488, Homework 4, Problem 3, Part e')

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fprintf('=====\\n')
fprintf('Problem 2 Part h\\n')
fprintf('=====\\n')
fprintf('This code plots the sum of the two transfer functions step
resopnce\\n ')
fprintf('see the figure below\\n\\n\\n\\n\\n')

figure(3)
stepplot(sys1,sys2,[0 10]); % finds and plots the responce to a unit step of
both systems
xlabel('t');
ylabel('x (meters)');
title('MAE 488, Homework 4, Problem 3, Part f')

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MAE 488, Homework # 4, Spring 2025
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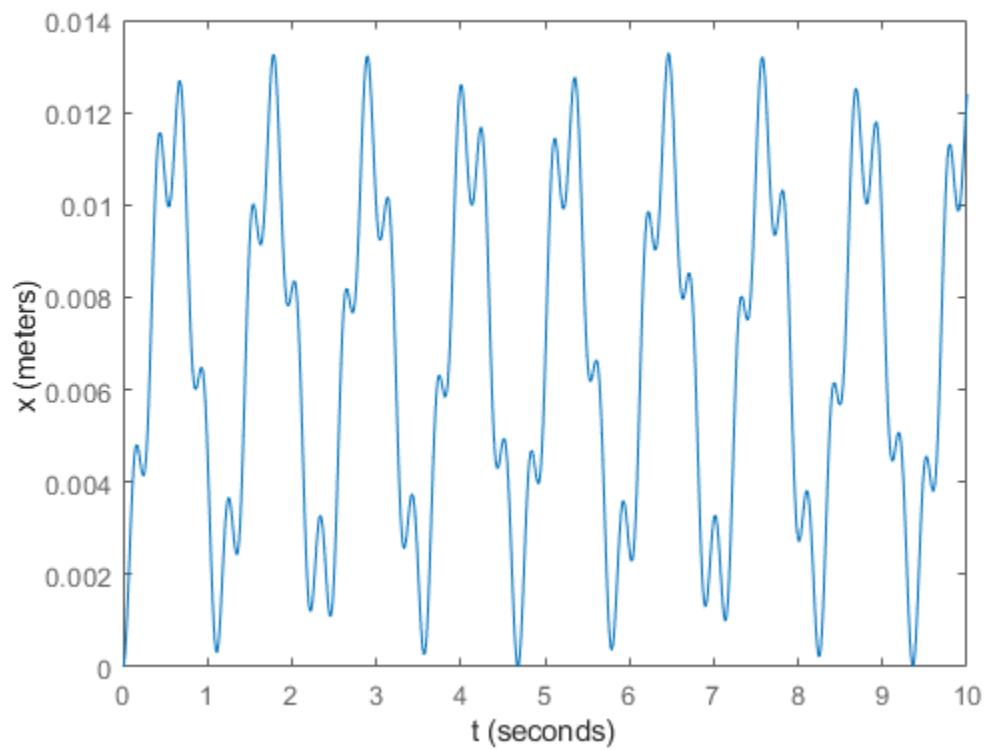
```
=====
Problem 3 Part d
=====
This code plots the transfer function x1 step resopnce
see the figure below
```

```
=====
Problem 2 Part h
=====
This code plots the transfer function of x2 step resopnce
see the figure below
```

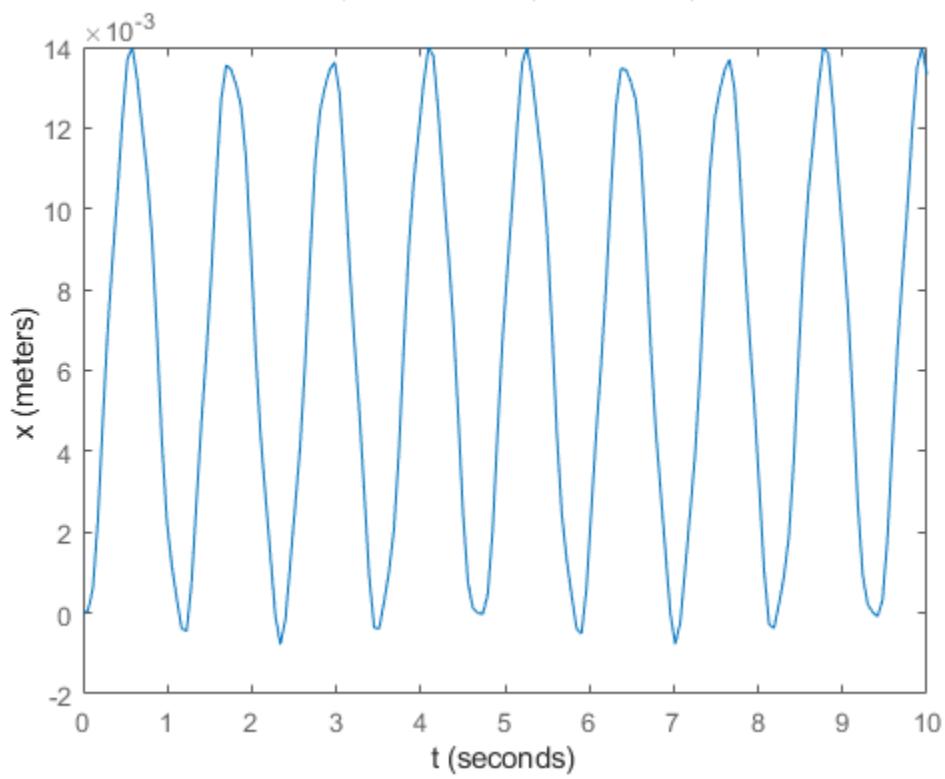
```
=====
Problem 2 Part h
=====
This code plots the sum of the two transfer functions step resopnce
see the figure below
```

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**MAE 488, Homework 4, Problem 3, Part d**

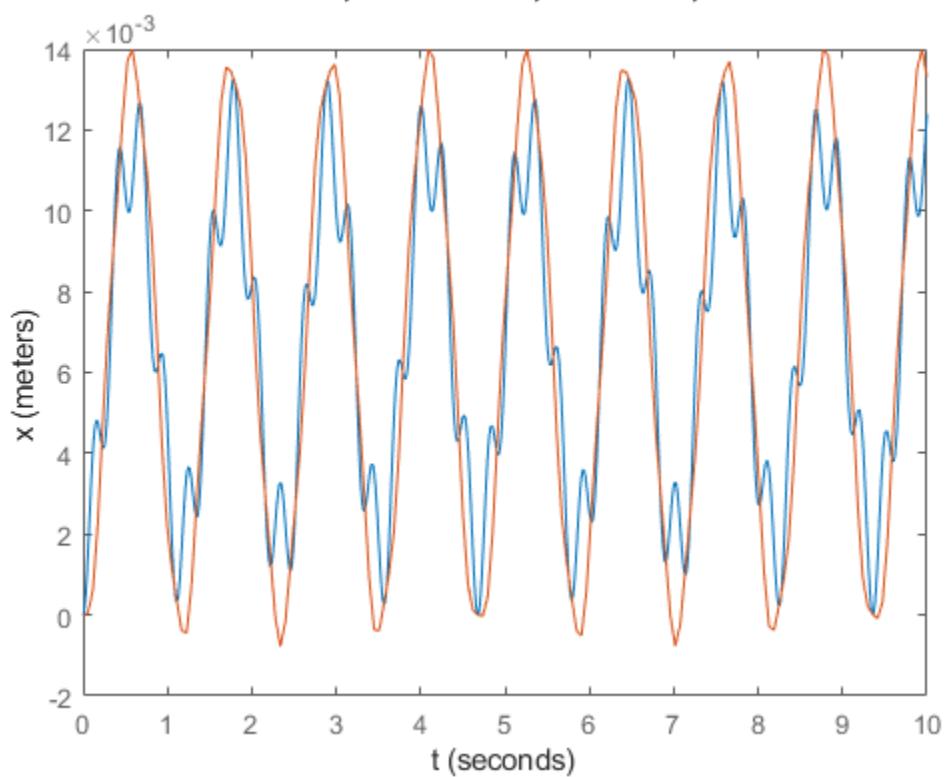


**MAE 488, Homework 4, Problem 3, Part e**



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**MAE 488, Homework 4, Problem 3, Part f**



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