Homework 1

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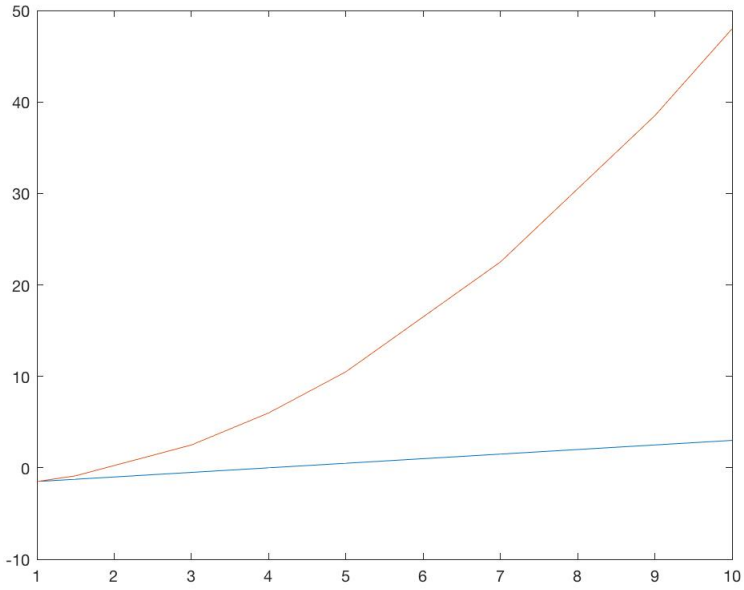
Problem 1.



The graph represents Y_1 and Y_2 graphed against X.

Problem 2.

The sum is 1000.

Problem 3.

The values are $C = \{29, 133, 43\}$, $D = \{-3.2505, 0.3961, 0.8037\}$, $E = 205$, $F = [2, 4; 3, 12]$ and $x = \{-0.1622, 1.2432, -1.1081\}$

Problem 4.

The code is attached below.

Problem 5.

The code is attached below.

Problem 6.

The beta values and standard errors I have obtained are, respectively, in order $beta = [0.0817, 0.1201, 0.1399, 0.0295]$ and $std = [0.0937, 0.0354, 0.0478, 0.0100]$.

Code:

```
diary hw1_diary.out

%% first problem

X = [ 1 1.5 3 4 5 7 9 10];

Y_1 = - 2 + 0.5 * X;
Y_2 = - 2 + 0.5 * X .^ 2;

plot(X, Y_1, X, Y_2);


%% second problem

X = linspace( -10, 20, 200);
s = sum(X);


%% third problem

A = [ 2 4 6; 1 7 5; 3 12 4];
b = [ -2; 3; 10];
C = A'* b;
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```
% note we can write in two ways
% D = (A' * A)\b;
D = inv(A' * A) * b;

E = sum (A * b);
[F, ps] = removerows(A, 'ind', [2 3]);
x = A\b;



%% fourth problem

I = eye(5);
B = kron(I, A);



%% fifth problem
% change for notation purposes AA instead of A
% denote the final output AC

AA = normrnd(10, 5, [5,3]);
AC = AA >= 10;



%% sixth problem

filename = 'datahw1.csv';
M = csvread(filename);

% extract the production function from M

P = M(:, 5);

M = (removerows(M', 'ind', [1 5]))';
M(:,1) = 1;

% define the values of beta and sigma

[beta, sigma, EE, CovB, logL] = mvregress(M, P, 'algorithm', 'cwls');
std = diag(CovB) .^ 0.5;


diary off
```