ECON 512 HW 1

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1 Q1

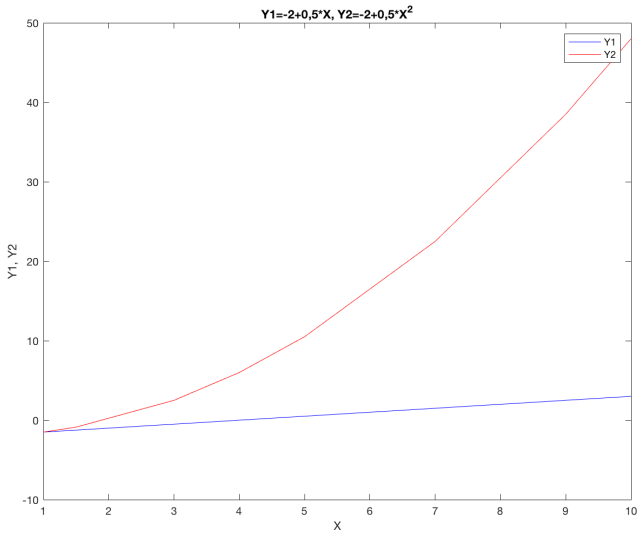

Figure 1: Plotting two functions Y1(X) and Y2(X).

2 Q2

The sum is equal to 1000.

3 Q3

$C = A'b = (29, 133, 43)'$; $D = (A'A)^{-1}b = (-3.2505, 0.3961, 0.8037)'$; $E = 205$; $F = (2, 4; 3, 12)$; $x = (-0.1622, 1.2432, -1.1081)'$.

4 Q4

See the code down below.

5 Q5

$$A = \begin{bmatrix} 8.9752 & 13.3575 & 15.1735 \\ 9.3792 & 3.9625 & 13.6344 \\ 17.4485 & 13.5862 & 8.4828 \\ 17.0452 & 18.1512 & 11.4694 \\ 17.0860 & 12.4445 & 6.0636 \end{bmatrix}$$

and check the code to see the conversion.

6 Q6

Point estimates (Standard error):

$\beta_0 = 0.0817(0.0167)$;
$\beta_1 = 0.1201(0.0063)$;
$\beta_2 = 0.1399(0.0085)$;
$\beta_3 = 0.0295(0.0018)$.

```
%ECON HW1 Xinle Pang
%% Question 1
X=[1,1.5,3,4,5,7,9,10];
Y1=-2+0.5*X;
Y2=-2+0.5*X.^2;

figure
plot(X, Y1, 'b', X, Y2, 'r');
title('Y1=-2+0,5*X, Y2=-2+0,5*X^2');
xlabel('X'); ylabel('Y1, Y2');
legend('Y1', 'Y2');

%% Question 2
clear
X=linspace(-10, 20, 200);
sumX=0;
for i=1:200
  sumX=sumX+X(i);
end

%% Question 3
clear
A=[2,4,6;1,7,5;3,12,4];
b=[-2;3;10];
C=A'*b;
D=(A'*A)\b;
E=sum(A,2)'*b;
F=A([1 3], [1 2]);
x=A\b;

%% Question 4
clear
A=[2,4,6;1,7,5;3,12,4];
B=kron(eye(5), A);

%% Question 5
clear
m=5;n=3;
A=normrnd(10,5,[m,n]);
AA=zeros(m,n);
for i=1:m
  for j=1:n
     if A(i,j)>=10
        AA(i,j)=1;
     end
  end
end

%% Question 6
clear
Data=csvread('datahw1.csv');
tb=table(Data(:,3),Data(:,4),Data(:,5),Data(:,6),'VariableNames', {'Export','RD','prod','cap'});
OLS=fitlm(tb,'prod~Export+RD+cap');
display(OLS);
```