Lab 4

Uppgift 1.

x1 =[1 1 3];

x2 =[-1 1 4];

x3 =[0 2 8];

A = [x1; x2; x3];

y1 =[1 -2 9];

y2 =[3 4 1];

y3 =[0 1 -3];

B =[y1; y2; y3];

inv(A\*B)

(inv(B))\*(inv(A))

ans =

-12.5000 -15.7500 13.7500

9.5000 11.7500 -10.2500

3.5000 4.2500 -3.7500

ans =

-12.5000 -15.7500 13.7500

9.5000 11.7500 -10.2500

3.5000 4.2500 -3.7500

Uppgift 2.

x1 =[1 2 3];

x2 =[2 1 2];

x3 =[-1 0 1];

A = [x1; x2; x3];

y1 =[1 4 2];

y2 =[2 2 1];

y3 =[-1 1 4];

B =[y1; y2; y3];

det(A) = -4

det(B) = -21

Uppgift 3.

x1 =[1 2 3];

x2 =[2 1 2];

x3 =[-1 0 1];

A = [x1; x2; x3];

y1 =[1 4 2];

y2 =[2 2 1];

y3 =[-1 1 4];

B =[y1; y2; y3];

z1 =[1 0 1];

z2 =[1 2 1];

z3 =[-1 3 4];

C =[z1; z2; z3];

X = inv(A)\*C\*inv(B);

X

X =

0.0833 0.0833 -0.2500

-1.7143 1.1429 -0.4286

0.9405 -0.4881 0.4643

Uppgift 4.

x1 = [12 2 0 9];

x2 = [2 -10 5 0];

x3 = [0 5 -22 7];

x4 = [9 0 7 -24];

A = [x1; x2; x3; x4];

B = [-100; 0; 0; 200];

X = inv(A)\*B;

X

X =

-0.7798

-1.9076

-3.5032

-9.6475

Uppgift 5.

Uppgift 6.

x1 = [2 -1 1];

x2 = [-1 2 1];

x3 = [-1 1 2];

A = [x1; x2; x3];

eig(A)

[X,D] = eig(A)

ans =

2.0000

3.0000

1.0000

X =

-0.5774 0.0000 -0.7071

-0.5774 0.7071 -0.7071

-0.5774 0.7071 -0.0000

D =

2.0000 0 0

0 3.0000 0

0 0 1.0000

x1 = [0 1 1];

x2 = [-4 4 1];

x3 = [-2 1 2];

A = [x1; x2; x3];

eig(A)

[X,D] = eig(A)

ans =

2.0000 + 1.0000i

2.0000 - 1.0000i

2.0000 + 0.0000i

X =

0.4743 - 0.1581i 0.4743 + 0.1581i -0.4472 + 0.0000i

0.7906 + 0.0000i 0.7906 + 0.0000i -0.8944 + 0.0000i

0.3162 + 0.1581i 0.3162 - 0.1581i 0.0000 + 0.0000i

D =

2.0000 + 1.0000i 0.0000 + 0.0000i 0.0000 + 0.0000i

0.0000 + 0.0000i 2.0000 - 1.0000i 0.0000 + 0.0000i

0.0000 + 0.0000i 0.0000 + 0.0000i 2.0000 + 0.0000i

x1 = [1 -3 4];

x2 = [4 -7 8];

x3 = [6 -7 7];

A = [x1; x2; x3];

eig(A)

[X,D] = eig(A)

ans =

3.0000

-1.0000

-1.0000

X =

0.3333 -0.4082 -0.4082

0.6667 -0.8165 -0.8165

0.6667 -0.4082 -0.4082

D =

3.0000 0 0

0 -1.0000 0

0 0 -1.0000