**Home work 3&4**

1. M=

Det(M)=(17\*-3)-(6\*-11)=15

M==1(-15-4)-1(-10-3)+2(8-9) =-8

1. a) A=

Det(A)=(-9+6)=-3

A-1=1/det(A) \* adj(A)

1/-3 \*=

b) A=

Det(A)=1(1-1)-0(0-1)+1(-1)=-1

Aminor =

Aadj =transpose(Aminor )=

A-1 =Aadj \*1/det(A)=

1. M=

=

=

Rank=2

M=======

Rank=3

1. A)

The equations is inconsistent (have no solutions)

B)

Infinite number of solutions:

X4=-2 X3=-2 let x2=c1 x1-2x2=1

X1=2c1+1

C)

X1=4/3 x2=1/3 x3=-1/3

1. A) A=

|A-ⱹI|=0

(2-ⱹ)2-1=0

ⱹ2+4-4ⱹ-1=0

ⱹ2-4ⱹ+3=0

ⱹ=3 ⱹ=1

tr(A)= ⱹ1+ ⱹ2=4

det(A)= ⱹ1\* ⱹ2=3

for ⱹ=3:

|A-ⱹI|X1=0

x1+x2=0 let x2=-c1 x1=c1

X1= if c1=1 X1=

|A-ⱹI|X2=0

x1-x2=0 let x2=c1 x1=c1

X2= if c1=1 X2=

B)let A2 =M

M=

|M-ⱹI|=0

()2 – 16=0

ⱹ2 +25-10ⱹ-16=0

ⱹ2 -10ⱹ+9=0

ⱹ=9 ⱹ=1

tr(A2 )= ⱹ1+ ⱹ2=10

det(A2 )= ⱹ1\* ⱹ2=9

for ⱹ=9 :

|A-ⱹI|X1=0

X1+x2=0 let x2=-c1 x1=c1

X1=

for ⱹ=1:

|A-ⱹI|X2=0

X1-x2=0 let x2=c2 x1=c2

X2=

C) det(A)=2\*2 – 1 =3

A-1=

A-1 = let A-1 = M

|M-ⱹI|=0

(2/3 -ⱹ)2 -1/9=0

ⱹ2 -4/3 ⱹ+1/3=0

ⱹ=1 ⱹ=1/3

tr(A-1 )= ⱹ1+ ⱹ2=4/3

det(A-1 )= ⱹ1\* ⱹ2=1/3

for ⱹ=1 :

|A-ⱹI|X1=0

x1-x2=0 let x2=c1 x1=c1

X1=

for ⱹ=1/3 :

|A-ⱹI|X1=0

x1+x2=0 let x2=-c2 x1=c2

X2=

D) A+4I= let A+4I=M

|M-ⱹI|=0

(6-ⱹ)2 -1=0

ⱹ2 -12ⱹ+36-1=0

ⱹ2 -12+35=0

ⱹ1=7 ⱹ2=5

tr(A+4I)= ⱹ1+ ⱹ2=12

det(A+4I)= ⱹ1\* ⱹ2=35

for ⱹ=7 :

|A-ⱹI|X1=0

x1+x2=0 let x2=-c1 x1=c1

X1=

for ⱹ=5 :

|A-ⱹI|X1=0

x1-x2=0 let x2=c2 x1=c2

X2=