1)A ve B matrisleriin determinatini hesaplayin.

$$A = \begin{bmatrix} 1 & 3 & 2 & 8 \\ 1.5 & 1 & 7 & 0 \\ 2 & 6 & 9 & 11 \\ 4 & 12 & 8 & -5 \end{bmatrix}, \quad B = \begin{bmatrix} 3 & 0 & 0 & 0 \\ 5 & 2 & 4 & 6 \\ 9 & 3 & 1 & 4 \\ 5 & 0 & 0 & 2 \end{bmatrix}$$

(use upper triangular form   for matrix A, and use determinant formula for matrix B)

2)Denklemleri inceleyin. q nun hangidegerleriicin bu sistem cozumsuzdur.

$x+2y=5, \quad 2x+y=4, \quad 3x+5y=q$

3)A natrisinin determinanti $\det(A)=\Delta A=20$, B,C,D,E,F, matrislerinin determinatini hesaplayin

$$A = \begin{bmatrix} a & x & p \\ b & y & q \\ c & z & r \end{bmatrix} \qquad B = \begin{bmatrix} b & y & q \\ a & x & p \\ c & z & r \end{bmatrix}, \quad C = \begin{bmatrix} 10b & 10y & 10q \\ a & x & p \\ c & z & r \end{bmatrix}$$

$$D = \begin{bmatrix} 10a & 10x & 10p \\ b & y & q \\ c & z & r \end{bmatrix}, \quad E = \begin{bmatrix} 9a & 9x & 9p \\ 9b & 9y & 9q \\ 9c & 9z & 9r \end{bmatrix}, \quad F = \begin{bmatrix} a & x & p \\ b & y & q \\ a+10b+c & x+10y+z & p+10q+r \end{bmatrix}$$

$$F = \begin{bmatrix} a & b & c \\ 2a+x & 2b+y & 2c+z \\ p & q & r \end{bmatrix}, \quad G = \begin{bmatrix} a & b & c \\ 2a+2x & 2b+2y & 2c+2z \\ p & q & r \end{bmatrix}$$

4)A,B,I matrisleri asagidaki gibidir. where $a_{11}, a_{12}.. \ a_{44}$,   and $b_{11}, b_{12}, \dots b_{42}$ reel rakamlardir.

$$A = \begin{bmatrix} a_{11} & a_{11} & a_{11} & a_{14} \\ a_{21} & a_{22} & a_{23} & a_{24} \\ a_{31} & a_{32} & a_{33} & a_{34} \\ a_{41} & a_{42} & a_{43} & a_{44} \end{bmatrix}, \quad B = \begin{bmatrix} b_{11} & b_{12} \\ b_{21} & b_{22} \\ b_{31} & b_{32} \\ b_{41} & b_{42} \end{bmatrix} \quad I = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}$$

a)Asagidaki carpimlardan hangileri dogrudur,
   1)AB   2)BA   3)AB^T 4)B^{T}A   5)AI
   6)BI   7)IB
a)Asagidaki esitliklerden hangileri dogrudur,
 1)AI=IA   2) $(AB)^T = B^T A^T$ 3) $A^T I = AI^T$
 4)$I^T = I$ 5)AIB=AB   6) $(A^T B)^T = B^T A$

5) A,B,C,D,X hepsi matrisdir. X matrisi bilinmeyen matrisdir. X i elde edin.
 a) XAB+XC+CA=A+XB
 b) AX+BAX=CX+DA
 c) XA+X^1=B

6) A,B,C, matrisleri verildigi gibidir. X'i bulun.

AX+BX=C

$$A = \begin{bmatrix} 2 & 0 \\ 0 & 4 \end{bmatrix}, \quad B = \begin{bmatrix} 3 & 3 \\ 0 & 2 \end{bmatrix}, \quad C = \begin{bmatrix} 16 \\ 12 \end{bmatrix}$$

)Calculate the rank of the following matrices

$$A = \begin{bmatrix} 2 & 6 & 4 & 2 \\ 5 & 5 & 5 & 5 \\ 2 & 6 & 4 & 2 \\ 3 & 3 & 3 & 3 \end{bmatrix}, \quad B = \begin{bmatrix} 1 & 2 \\ 3 & 4 \\ 5 & 6 \\ 7 & 8 \\ 9 & 0 \end{bmatrix}, \quad C = \begin{bmatrix} 0 & 0 & 0 \\ 1 & 1 & 1 \\ 2 & 2 & 2 \\ 3 & 3 & 3 \\ 4 & 4 & 4 \end{bmatrix}, \quad D = \begin{bmatrix} 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \end{bmatrix}$$

8)Asagidaki denklemi inceleyin. Bu sistem hakkinda hangi şıklar do[rudur. Neden?

$$\begin{bmatrix} 4 & 0 & 0 & 0 \\ 0 & 4 & 1 & 3 \\ 0 & 8 & 2 & 6 \end{bmatrix} \begin{bmatrix} x \\ y \\ z \\ w \end{bmatrix} = \begin{bmatrix} a \\ b \\ 2b \end{bmatrix}$$

State true or false.
b)This system has multiple solution …………
a)This system has no solution …………
 c)We cannot say anything unless we know the exact values of a and b

9) X,Y,Z lineer bagimsizz vektorlerdir.

$$X = \begin{bmatrix} a \\ b \\ c \end{bmatrix}, \quad Y = \begin{bmatrix} d \\ e \\ f \end{bmatrix}, \quad Z = \begin{bmatrix} g \\ h \\ k \end{bmatrix}, \quad P = \begin{bmatrix} a & d & g \\ b & e & h \\ c & f & k \end{bmatrix}, \quad Q = \begin{bmatrix} a & b & c \\ d & e & f \\ g & h & k \end{bmatrix}$$

Dogru yada yanlis oldugunu gerekcesi ile beraber belirtin.
   a) det P=0   b) det P = det Q   c) P^T=Q   d) P=Q^T e) P^{-1} = Q^{-1} f) P^{-1} = $[Q^{-1}]^T$

  g) P^{-1} = $[Q^T]^{-1}$

9) X,Y,Z lineer bagimli vektorlerdir. $X = \begin{bmatrix} a \\ b \\ c \end{bmatrix}, \quad Y = \begin{bmatrix} d \\ e \\ f \end{bmatrix}, \quad Z = \begin{bmatrix} g \\ h \\ k \end{bmatrix},$

Q matrisi ve M,N,P vektorleri asagidaki gibidir.

$$P = \begin{bmatrix} a & d & g \\ b & e & h \\ c & f & k \end{bmatrix}, \qquad \begin{aligned} M &= \begin{bmatrix} a & d & g \end{bmatrix}, \\ N &= \begin{bmatrix} b & e & h \end{bmatrix} \\ P &= \begin{bmatrix} c & f & k \end{bmatrix} \end{aligned}$$

Dogru yada yanlis oldugunu gerekcesi ile beraber belirtin.
a)det P=0, b) P^{-1} vardir. c) M,N,P lineer bagimlidir. d) rank P=3