

1. Using Gaussian Elimination Strategy to solve the following:

a)
$$\begin{cases} x - 4y + z = 2 \\ -x + 3y - z = 1 \\ x + 2z = 3 \end{cases}$$

b)
$$\begin{cases} x + 2y + z = -1 \\ 5x - y = -3 \\ 2x - 3y + z = 0 \\ 2x - 2y = 2 \end{cases}$$

c)
$$\begin{cases} x+3y-4z=0 \\ 2x+6y-8z=1 \end{cases}$$

d)
$$\begin{cases} 3x+4y+z=5 \\ x+2y+6z+7w=0 \end{cases}$$

2. Find conditions on $r, s, t \in \mathbb{R}$ which guarantee that the following system has a solution:

$$\begin{cases} x + y + z = r \\ x + 6y + 3z = s \\ 3x - 2y + z = t \end{cases}$$

3. Evaluate AB , $B^T C$, $BA + 2C$ for $A = \begin{bmatrix} 2 & -3 & 1 \\ 1 & -4 & 0 \end{bmatrix}$; $B = \begin{bmatrix} 2 & -2 \\ 1 & 3 \\ 0 & 5 \end{bmatrix}$; $C = \begin{bmatrix} 2 & -1 & 0 \\ 1 & 2 & 3 \\ 4 & 5 & -2 \end{bmatrix}$.

3. Problems: 6, 7, 22, 23, 25, 26 on page 32 – 33.