

$$A_c \left[\begin{array}{ccccc|c} 2 & 0 & 3 & 0 & -4 & 5 \\ 3 & -4 & 2 & 3 & 0 & 8 \\ 1 & -1 & 2 & 1 & -1 & 2 \\ -2 & 5 & -9 & -3 & -5 & -8 \end{array} \right] \quad (1)$$

$$\sim \left[\begin{array}{ccccc|c} 1 & 0 & \frac{3}{2} & 0 & -2 & \frac{5}{2} \\ 3 & -4 & 2 & 3 & 0 & 8 \\ 1 & -1 & 2 & 1 & -1 & 2 \\ -2 & 5 & -9 & -3 & -5 & -8 \end{array} \right] \sim \left[\begin{array}{ccccc|c} 1 & 0 & \frac{3}{2} & 0 & -2 & \frac{5}{2} \\ 0 & -4 & -\frac{7}{2} & 3 & 6 & \frac{1}{2} \\ 0 & -1 & \frac{1}{2} & 1 & 1 & \frac{1}{2} \\ 0 & 5 & -6 & -3 & -9 & -\frac{1}{2} \end{array} \right]$$

$$\sim \left[\begin{array}{ccccc|c} 1 & 0 & \frac{3}{2} & 0 & -2 & \frac{5}{2} \\ 0 & -4 & -\frac{7}{2} & 3 & 6 & \frac{1}{2} \\ 0 & -1 & \frac{1}{2} & 1 & 1 & \frac{1}{2} \\ 0 & 5 & -6 & -3 & -9 & -\frac{1}{2} \end{array} \right]$$

$$\sim \left[\begin{array}{ccccc|c} 1 & 0 & \frac{3}{2} & 0 & -2 & \frac{5}{2} \\ 0 & 1 & \frac{-7}{2} & \frac{-3}{4} & \frac{-3}{2} & \frac{-1}{2} \\ 0 & -1 & \frac{1}{2} & 1 & 1 & \frac{1}{2} \\ 0 & 5 & -6 & -3 & -9 & -\frac{1}{2} \end{array} \right] \sim \left[\begin{array}{ccccc|c} 1 & 0 & \frac{3}{2} & 0 & -2 & \frac{5}{2} \\ 0 & 1 & \frac{-7}{2} & \frac{-3}{4} & \frac{-3}{2} & \frac{-1}{2} \\ 0 & 0 & \frac{1}{2} & \frac{1}{4} & \frac{1}{2} & \frac{-5}{2} \\ 0 & 0 & \frac{-13}{2} & \frac{3}{4} & \frac{-3}{2} & \frac{-19}{2} \end{array} \right]$$

$$\sim \left[\begin{array}{ccccc|c} 1 & 0 & \frac{3}{2} & 0 & -2 & \frac{5}{2} \\ 0 & 1 & \frac{-7}{2} & \frac{-3}{4} & \frac{-3}{2} & \frac{-1}{2} \\ 0 & 0 & 1 & \frac{-2}{3} & \frac{4}{3} & \frac{5}{3} \\ 0 & 0 & \frac{-13}{2} & \frac{3}{4} & \frac{-3}{2} & \frac{-19}{2} \end{array} \right] \sim \left[\begin{array}{ccccc|c} 1 & 0 & \frac{3}{2} & 0 & -2 & \frac{5}{2} \\ 0 & 1 & \frac{-7}{2} & \frac{-3}{4} & \frac{-3}{2} & \frac{-1}{2} \\ 0 & 0 & 1 & \frac{-2}{3} & \frac{4}{3} & \frac{5}{3} \\ 0 & 0 & 0 & \frac{1}{3} & \frac{2}{3} & \frac{1}{3} \end{array} \right]$$

$$\sim \left[\begin{array}{ccccc|c} 1 & 0 & \frac{3}{2} & 0 & -2 & \frac{5}{2} \\ 0 & 1 & \frac{-7}{2} & 0 & -3 & \frac{-7}{2} \\ 0 & 0 & 1 & 0 & 0 & 1 \\ 0 & 0 & 0 & 1 & -2 & -1 \end{array} \right] \sim \left[\begin{array}{ccccc|c} 1 & 0 & 0 & 0 & -2 & 1 \\ 0 & 1 & 0 & 0 & -3 & 0 \\ 0 & 0 & 1 & 0 & 0 & 1 \\ 0 & 0 & 0 & 1 & -2 & -1 \end{array} \right]$$

$$\sim \left[\begin{array}{ccccc|c} 1 & 0 & 0 & 0 & -2 & 1 \\ 0 & 1 & 0 & 0 & -3 & 0 \\ 0 & 0 & 1 & 0 & 0 & 1 \\ 0 & 0 & 0 & 1 & -2 & -1 \end{array} \right]$$

$$\Rightarrow \begin{cases} x_1 - 2x_5 = 1 \\ x_2 - 3x_5 = 0 \\ x_3 = 1 \\ x_4 - 2x_5 = -1 \end{cases} \Rightarrow \begin{cases} x_1 = 2x_5 + 1 \\ x_2 = 3x_5 \\ x_3 = 1 \\ x_4 = 2x_5 - 1 \end{cases}$$

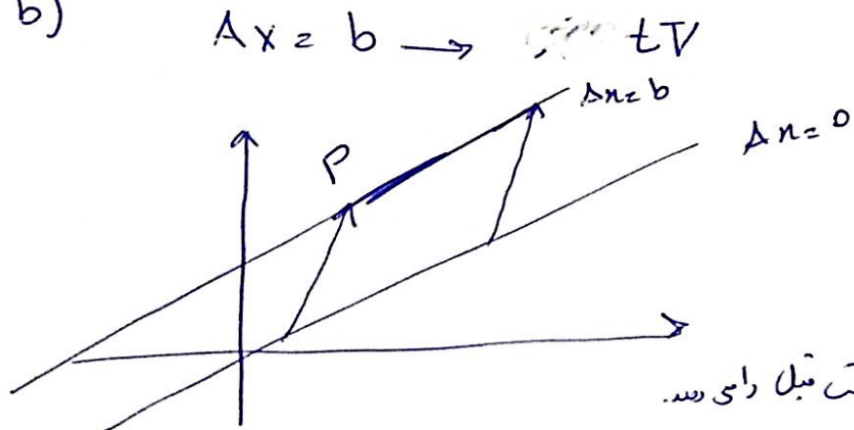
x_5 is free

$$\Rightarrow \begin{bmatrix} x_1 \\ x_2 \\ x_3 \\ x_4 \\ x_5 \end{bmatrix} = \begin{bmatrix} 2x_5 + 1 \\ 3x_5 \\ 1 \\ 2x_5 - 1 \\ x_5 \end{bmatrix}$$

$$= \underbrace{\begin{bmatrix} 1 \\ 0 \\ 1 \\ -1 \\ 0 \end{bmatrix}}_P + x_5 \underbrace{\begin{bmatrix} 2 \\ 3 \\ 0 \\ 2 \\ 1 \end{bmatrix}}_V$$

$$= P + x_5 V = P + tV$$

b)



$Ax = 0$ جواب tV در سمت قبل راسی است.

در جوابی خطی $Ax = b$ در واقع همین خط $(Ax = 0) \cup L$ باید دارای دیگر
جمع می شود و پاسخ است