

S2)

$$x + 5y + 5z + 2t = 2$$

$$-y + 3z + 4t = 0$$

$$2x + y + 9z + 6t = -3$$

$$3x + 2y + 4z + 8t = -1$$

S2)

$$\sim R \left[ \begin{array}{cccc|c} 1 & 3 & 5 & 2 & 2 \\ 0 & -1 & 3 & 4 & 0 \\ 2 & 1 & 9 & 6 & -3 \\ 3 & 2 & 4 & 8 & -1 \end{array} \right] \begin{array}{l} R_3 - 2R_1 \\ R_4 - 3R_1 \end{array}$$

$$\sim R \left[ \begin{array}{cccc|c} 1 & 3 & 5 & 2 & 2 \\ 0 & -1 & 3 & 4 & 0 \\ 0 & -5 & -1 & 2 & -7 \\ 0 & -7 & -11 & 2 & -7 \end{array} \right] \begin{array}{l} -1 \cdot R_2 \\ -1 \cdot R_4 \end{array}$$

$$\sim R \left[ \begin{array}{cccc|c} 1 & 3 & 5 & 2 & 2 \\ 0 & -1 & 3 & 4 & 0 \\ 0 & 5 & 4 & -2 & 7 \\ 0 & 7 & 11 & -2 & 7 \end{array} \right] \begin{array}{l} R_3 + 5R_2 \\ R_4 + 7R_2 \end{array}$$

$$\sim R \left[ \begin{array}{cccc|c} 1 & 3 & 5 & 2 & 2 \\ 0 & -1 & 3 & 4 & 0 \\ 0 & 0 & 16 & 18 & 7 \\ 0 & 0 & 32 & 26 & -7 \end{array} \right] R_4 - 2R_3$$

$$\sim R \left[ \begin{array}{cccc|c} 1 & 3 & 5 & 2 & 2 \\ 0 & -1 & 3 & 4 & 0 \\ 0 & 0 & 16 & 18 & 7 \\ 0 & 0 & 0 & -10 & 7 \end{array} \right]$$

from eq (iv)  $10t = 17 \Rightarrow t = 7/10$

$t = 0.7$

put in eq (i)

$$16z + 18(0.7) = 7$$

$$16z + 12.6 = 7$$

$$2 \Rightarrow 16z = 7 - 12.6 = -5.6$$

$$z = -5.6/16$$

$$z = -0.35$$

Put in eq (1)

$$4y + 3x - 0.55 + 4(0.7) = 0$$

$$-4y = 0.105 + 2.8 = 2.905$$

$$-4y + 2.695 = 0$$

$$4 = 2.695$$

Put in eq (1)

$$x + 3(2.695) + 5(-0.35) + 1.5(0.7) = 2$$

$$x + 0.085 - 1.75 + 1.05 = 2$$

$$x + 0.385 + 1.05 = 2$$

$$x + 1.435 = 2$$

$$x = 2 - 1.435$$

$$x = 0.565$$

Solved