

## Practice Question Lecture # 5

### Question 1:

Find a vector equation of the plane whose parametric equations are given below:

$$x = 1 - 2t_1 + 3t_2, \quad y = 4 - 5t_1 + 6t_2, \quad z = 7 - 8t_1 - 9t_2$$

### Question 2:

Find a vector equation of the line in  $R^2$  that passes through the point  $(1, 3)$  and is parallel to the vector

$$\vec{v} = (3, 4)$$

### Question 3:

Write the vector  $\vec{a} = (2, 3)$  as a linear combination of the vectors  $(1, 0)$  and  $(0, 1)$ .

### Question 4:

If  $a_1 = \begin{pmatrix} 1 \\ 2 \\ -3 \end{pmatrix}$ ,  $a_2 = \begin{pmatrix} 1 \\ -5 \\ -2 \end{pmatrix}$  and  $b = \begin{pmatrix} 3 \\ -4 \\ 6 \end{pmatrix}$ . Determine whether  $b$  can be generated as a linear combination of  $a_1$  and  $a_2$ ?

### Question 5:

If  $\vec{s} = \begin{bmatrix} 2 \\ 8 \end{bmatrix}$  and  $\vec{t} = \begin{bmatrix} 1 \\ 4 \end{bmatrix}$ . Determine whether  $\vec{b} = \begin{bmatrix} 5 \\ 15 \end{bmatrix}$  is in  $\text{Span}\{\vec{s}, \vec{t}\}$  or not?