

QUIZ 3

(45MINS, 30PTS)

Please write down your name, SID, and solutions discernably.

Name :

SID :

Score :

1. (6pts : 3pts each) Determine whether the lines L_1 and L_2 are parallel, skew, or intersecting. If they intersect, find the point of intersection.

$$\text{a) } \begin{cases} L_1 : x = 1 + 6t, & y = 2 - 10t, & z = 3 + 4t \\ L_2 : x = 4 - 21s, & y = -5 + 35s, & z = 7 - 14s \end{cases}$$

$$\text{b) } \begin{cases} L_1 : \frac{x-4}{5} = \frac{y-2}{7} = \frac{z-4}{-3} \\ L_2 : \frac{x-12}{-2} = \frac{y-11}{-5} = \frac{z-9}{11} \end{cases}$$

2. (3pts) Find the cosine of the angle between the planes $x + 2y + 5z = 14$ and $3x - 2y - 7z = 1$.

3. (15pts : 5pts each) Find an equation of the plane.

a) The plane through the point $(\frac{1}{3}, \frac{2}{5}, -3)$ and parallel to the plane $3x + 5y - 2z = 0$.

b) The plane consisting of all points that are equidistant from the points $(1, 7, 4)$ and $(-1, 3, -2)$.

c) The plane through the point $(5, -2, 7)$ and contains the line of an equation $x - 11 = \frac{y-2}{5} = 3z - 1$.

4. (6pts : 3pts each) Find equations for the surfaces obtained by rotating $x = y^2$ about the x -axis and y -axis, respectively.