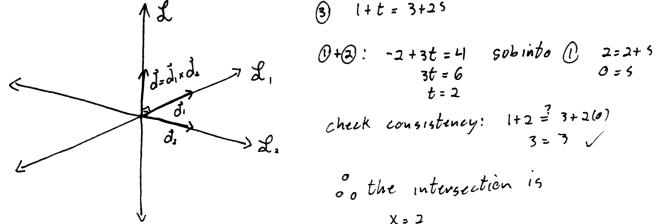
Quiz 12

This quiz is graded out of 10 marks. No books, calculators, notes or cell phones are allowed. You must show all your work, the correct answer is worth 1 mark the remaining marks are given for the work. If you need more space for your answer use the back of the page.

Question 1. Supplementary Exercises #1.4.1 (6 marks) Write the parametric equation of the line that passes through the point of intersection and

orthogonal to both lines, where
$$\int x = t$$

$$\vec{x} = \begin{cases} x = t \\ y = -2 + 2t \\ z = 1 + t \end{cases}$$
 and $\vec{x} = \begin{cases} x = 2 + t \\ y = 2 - t \\ z = 3 + 2t \end{cases}$



$$\vec{d} = \vec{d}_{1} \times \vec{d}_{2} = \left(\begin{vmatrix} 2 & -1 \\ 1 & 2 \end{vmatrix}, - \begin{vmatrix} 1 & 1 \\ 1 & 2 \end{vmatrix}, \begin{vmatrix} 1 & 1 \\ 2 & -1 \end{vmatrix} \right)$$

$$= \frac{1}{2} = (5, -1, -3)$$

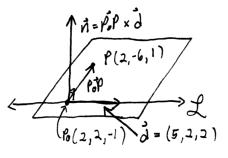
$$0+2: -2+3t=4$$
 subinto $0: 2=2+3$

$$y = -2 + \lambda(2) = 2$$

 $z = 1 + 2 = 3$

Question 2. Supplementary Exercises #1.5.3 (4 marks) Give the equation of the plane that contains the point (2, -6, 1) and the line

$$\vec{x} = \begin{cases} x = 2 + 5t \\ y = 2 + 2t \\ z = -1 + 2t \end{cases}$$



$$\rho_{0}\dot{p} = \rho - \rho_{0} = (2, -6, 1) - (2, 2, -1) = (0, -8, 2)$$

$$\vec{n} = \rho_{0}\dot{p} \times \vec{d} = (\begin{vmatrix} -8 & 2 \\ 2 & 2 \end{vmatrix}, -\begin{vmatrix} 0.5 \\ 2 & 2 \end{vmatrix}, \begin{vmatrix} 0.5 \\ -8 & 2 \end{vmatrix})$$

$$ax + by + cz = d$$

 $-20x + l0y + 40z = d$ subpoint $(2, -6, 1)$
 $-20(2) + 10(-6) + 401 = d$
 $-60 = d$

or
$$(x,y,z) = (2,-6,1) + t(5,2,2) + s(0,-8,2)$$
 $t, s \in \mathbb{R}$