

1. The lines L_1 and L_2 are given by the following parametric equations:

$$L_1 : x = 5 + 3t, y = 3 - 2t, z = -5,$$

$$L_2 : x = 2 + 9s, y = 5 - 6s, z = 3 + 8s$$

Determine if the the lines L_1 , L_2 are parallel, intersect, or are skew.

2. Determine if the statement is true or false and give a brief justification of your answer:

If two planes intersect in a line L , then the cross product of the normal vectors of the two planes is a directional vector for line L .

3. Find the equation of the plane through the points $A(0,1,0)$, $B(2,1,3)$ that is perpendicular to the plane $2x - y + z + 1 = 0$.