Lecture 4 Worksheet

May 17, 2021

1. Write an equation for the plane containing the point $P = (8, -1, 6)$ orthogonal to the vector $\vec{N} = \langle 2, 1, -4 \rangle$.

2. Write an equation for the plane containing the points $P_1 = (0, 0, 3)$, $P_2 = (-1, 2, 0)$, and $P_3 = (1, 1, 1)$.

3. Write a vector equation for the line that is the intersection of the planes given by the equations
$$2x + 5y + z = 4$$
and
$$-x + 2y - z = 0$$

4. Write an equation for the plane containing the point $P = (0, 5, -1)$ and the line given by the vector equation
$$\vec{r}(t) = \langle 2 - t, 4 + 2t, 1 \rangle$$

5. Find the intersection of the plane given by the scalar equation
$$x - y + 2z = -4$$
with the line given by the vector equation
$$\vec{r}(t) = \langle 1 + t, 1 + 3t, -t \rangle$$