

Name:

1. Show that the point $P(1, 2, 3)$ lies on the plane defined by $2x + 3y - z = 5$.
2. Find the “parametric equation” of the line that passes through $P(1, 2, 3)$ and is perpendicular to the plane from problem 1.

3. Find a vector perpendicular to the vectors $\mathbf{v} = \langle 1, 2, 1 \rangle$ and $\mathbf{w} = \langle 3, 1, 1 \rangle$.
4. Find the equation of a plane that passes through the points $O(0, 0, 0)$, $P(1, 2, 1)$ and $Q(3, 1, 1)$.
5. Find the equation of a plane that is parallel to the plane you found in problem 4 but that passes through the point $R(5, 1, 0)$.