1. Let \( \mathbf{v} = <1, 3, 2, 5, 6> \) and \( \mathbf{u} = <3, -2, -1, 0, 9> \), compute \( 2\mathbf{u}, \mathbf{u} + \mathbf{v} \) and \( \mathbf{u} \cdot \mathbf{v} \).

2. Given \( \mathbf{v} = <x, 1, 9, 2> \). Find \( x \) such that \( \mathbf{v} \) is orthogonal to \( <x, 0, -1, 0> \).

3. Decide if the following statement is true or false, if false give a counterexample:
   \( \text{If } \mathbf{v} \cdot \mathbf{w} = \mathbf{v} \cdot \mathbf{u} \text{ then } \mathbf{u} = \mathbf{w} \).

4. Let \( P(0, 0, 1) \) and \( \mathbf{n} = [1, 2, 3] \) be a point of a vector.
   (a) Find the equation of the plane perpendicular to \( \mathbf{n} \) and passing through \( P \).

   (b) Find the parametric equations of the line perpendicular to the plane.