Math 2110Q - Multivariable Calculus **Section 12.5 Worksheet**
Name:

1. Find the equation of a line parallel to

$$\frac{x-5}{2} = 2(y-3) = \frac{z-15234}{3}$$

passing through the point $P_0(2, 1, -2)$.

2. Find an equation of the plane through the origin and the points $(3, -3, 8)$ and $(8, 1, 2)$.

3. Find the equation of the line given by the intersection of the two planes:

$$x + y + z = 1, \quad x - 2y + 3z = 1.$$

Hint: A vector is in a plane only if it is orthogonal to the normal vector of the plane.

4. Find an equation of the plane that passes through the point $(1, 3, 4)$ and contains the line

$$x = 4t,\ y = 1 + t,\ z = 3 - t.$$

Hint: Find three points on the plane and then proceed as in #1.

Alternative hint: The direction of the line gives you a vector in the plane.

5. Sketch the plane $2x + 5y + z = 10$.