Math 2551 Worksheet Section 12.5

1. Find parametric equation for
   (a) the line through point $P = (1, 2, -1)$ and point $Q(-1, 0, 1)$.
   (b) the line through $(0, -7, 0)$ perpendicular to the plane $x + 2y + 2z = 13$.
   (c) the line in which the planes $3x - 6y - 2z = 3$ and $2x + y - 2z = 2$ intersect.
2. How do we know that the points $(1, 1, -1)$, $(2, 0, 2)$, and $(0, -2, 1)$ determine a unique plane? Find the equation of the plane through $(1, 1, -1)$, $(2, 0, 2)$, and $(0, -2, 1)$.
3. Find the distance from the point $(2, 1, 3)$ to the line $x = 2 + 2t$, $y = 1 + 6t$, $z = -3 - 5t$.
4. Find the distance from the point $(2, -3, 4)$ to the plane $x + 2y + 2z = 13$.
5. When will 3 distinct points NOT determine a unique plane? Find 2 planes that are not parallel that both contain the points $P(1, -1, 1)$, $Q(3, 2, 0)$, and $R(5, 5, -1)$.