1.9 Pop quiz on Lecture 9 material

1. Determine the vector, parametric and Cartesian equations of the line through the points $P = (-1, 2, 3)$ and $Q = (4, -2, 5)$.

2. Find a vector equation of the "friendly" line through the point $(2, 0, 1)$ that is parallel to the "enemy' line
$$\frac{x-1}{1} = \frac{y+2}{-2} = \frac{z-6}{2}.$$
Does the point $(0, 4, -3)$ lie on the "friendly" line?

3. Find the vector equation for the plane in $\mathbb{R}^3$ containing the points $P = |1, 0, 2\rangle$ and $Q = |1, 2, 3\rangle$ and $R = |4, 5, 6\rangle$.

4. Where does the line
$$\frac{x-1}{1} = \frac{y-2}{2} = \frac{z-3}{3}$$
intersect the plane $3x + 2y + z = 20$?

5. Find a vector form for the line of intersection of the two lanes $x+3y+2z = 6$ and $3x+2y+z = 11$.