1 Math 53: Practice Problems

1) [#9 in §12.5] Find the parametric and symmetric equations for the line through the points $P(-8, 1, 4)$ and $Q(3, -2, 4)$.

2) [#31 in §12.5] Find an equation of the plane through the points $P(0, 1, 1)$, $Q(1, 0, 1)$, and $R(1, 1, 0)$. 
3) [#78 in §12.5] Find the distance between the skew lines with parametric equations

\[ \begin{align*}
x &= 1 + t, \\
y &= 1 + 6t, \\
z &= 2t
\end{align*} \]

\[ \begin{align*}
x &= 1 + 2s, \\
y &= 5 + 15s, \\
z &= -2 + 6s
\end{align*} \]

4) [#37 in §12.5] Find the equation of the plane containing the following point and line: the point is \((-1, 2, 1)\) and the line is given by the intersection of the planes \(x + y - z = 2\) and \(2x - y + 3z = 1\).