Consider the points

$$
\begin{array}{lll}
P_{1}=(-1,3,4) & P_{2}=(2,-1,3) & P_{3}=(-2,-3,5) \\
Q_{1}=(2,0,3) & Q_{2}=(4,1,-2) & Q_{3}=(5,1,6)
\end{array}
$$

1. Find an equation of the line through $P_{1}$ and $P_{2}$.
2. Find the equation of the plane that contains $P_{1}, P_{2}$, and $P_{3}$.
3. Find the equation of the plane that contains $Q_{1}, Q_{2}$, and $Q_{3}$.
4. Find where the line in $\# 1$ intersects the plane in $\# 3$.
5. Find the line of intersection of the planes in \#2 and \#3.
