Consider the points

$$P_1 = (-1, 3, 4) \quad P_2 = (2, -1, 3) \quad P_3 = (-2, -3, 5)$$

$$Q_1 = (2, 0, 3) \qquad Q_2 = (4, 1, -2) \quad Q_3 = (5, 1, 6)$$

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.