

Consider the points

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

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

1. Find an equation of the line through P_1 and P_2 .
2. Find the equation of the plane that contains Q_1 , Q_2 , and Q_3 .
3. Find where the line in #1 intersects the plane in #2.
4. Find the line of intersection of the plane in #2 with the plane $5x + y + 11z = 42$.