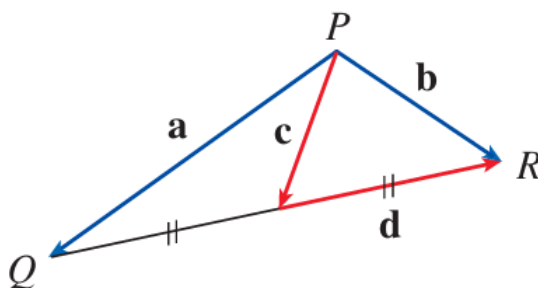


1. Find the lengths of the sides of the triangle PQR . Is it a right triangle? Is it an isosceles triangle?
 - (a) $P(3, -2, -3), Q(7, 0, 1), R(1, 2, 1)$
 - (b) $P(2, -1, 0), Q(4, 1, 1), R(4, -5, 4)$
2. In the figure, the tip of \mathbf{c} and the tail of \mathbf{d} are both the midpoint of QR . Express \mathbf{c} and \mathbf{d} in terms of \mathbf{a} and \mathbf{b}



3. Find the direction cosines and direction angles of the vector. (keep anti-trigonometric function in results)
 - (a) $\langle 4, 1, 8 \rangle$
 - (b) $3\mathbf{i} - \mathbf{j} - 2\mathbf{k}$
 - (c) $\langle c, c, c \rangle$, where $c > 0$