3 The vertices of the triangle OXY have coordinates $X(-24, 72, 24)$, $Y(-28, 4, -12)$, where O is a fixed origin.

The point R lies on OX such that $OR:RX = 1:3$

The point Q is the midpoint of OY.

The point P is the intersection of XQ and YR.

By using vector methods, or otherwise, find the exact coordinates of P.

[11 marks]