2017 Q15

15. (a) A beam of light passes through the points B(7, 8, 1) and T(−3, −22, 6).
Obtain parametric equations of the line representing the beam of light.

(b) A sheet of metal is represented by a plane containing the points P(2, 1, 9),
Q(1, 2, 7) and R(−3, 7, 1).
Find the Cartesian equation of the plane.

(c) The beam of light passes through a hole in the metal at point H.
Find the coordinates of H.

Answers

(a) \( x = 2\lambda + 7, \quad y = 6\lambda + 8, \quad z = -\lambda + 1 \)

\( or \) \( x = 2\lambda - 3, \quad y = 6\lambda - 22, \quad z = -\lambda + 6 \)

(b) \( 4x + 2y - z = 1 \)

(c) \( H(3, -4, 3) \)