Section 11.5 Lines and Planes in Space

MATH211 Calculus III

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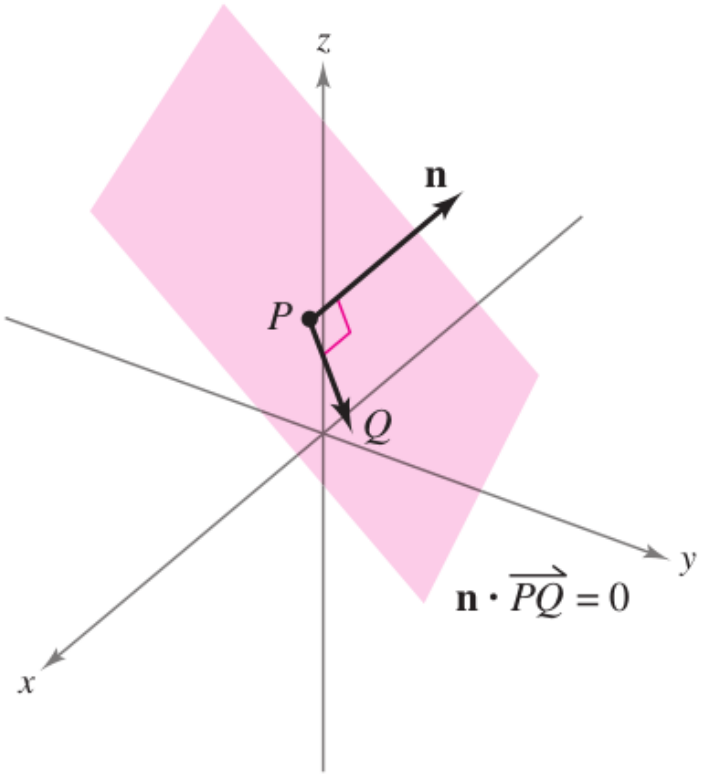
DEPARTMENT OF COMPUTING, MATHEMATICS AND PHYSICS

Knowledge Checks

How to form an equation of a plane?

Knowledge Checks

How to form an equation of a plane?



The normal vector $\mathbf{n}$ is orthogonal to each vector $\overrightarrow{PQ}$ in the plane.

$\mathbf{n} = \langle a, b, c \rangle$
$P(x_1, y_1, z_1)$
$Q(x, y, z)$

$$a(x-x_1)+b(y-y_1)+c(z-z_1) = 0$$

Knowledge Checks

How to form a set of equations of a line?

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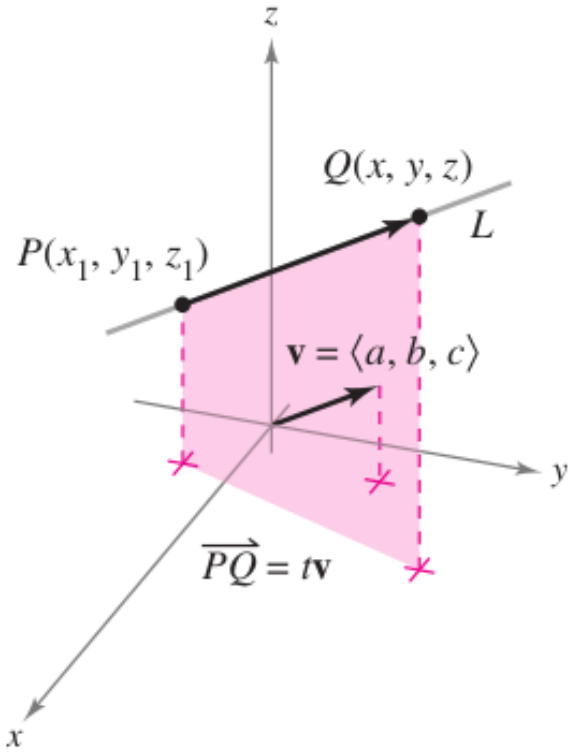
How to form a set of equations of a line?



Line L and its direction vector $\mathbf{v}$

$\mathbf{v} = \langle a, b, c \rangle$
$P(x_1, y_1, z_1)$

parametric equations

$$x = x_1 + at,\ y = y_1 + bt,\ z = z_1 + ct.$$

symmetric equations

$$\frac{x - x_1}{a} = \frac{y - y_1}{b} = \frac{z - z_1}{c}.$$