

Section 11.5

B.H.

Section 11.5 Lines and Planes in Space

MATH211 Calculus III

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DEPARTMENT OF
COMPUTING, MATHEMATICS
AND PHYSICS

Knowledge Checks

Section 11.5

B.H.

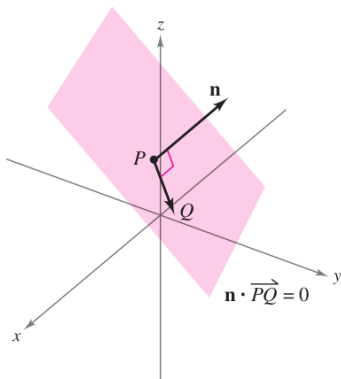
How to form an equation of a plane?

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How to form an equation of a plane?



$$\mathbf{n} = \langle a, b, c \rangle$$

$$P(x_1, y_1, z_1)$$

$$Q(x, y, z)$$

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

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

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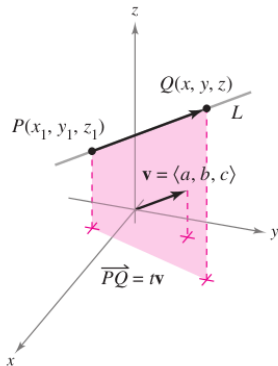
How to form a set of equations of a line?

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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

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

symmetric equations

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