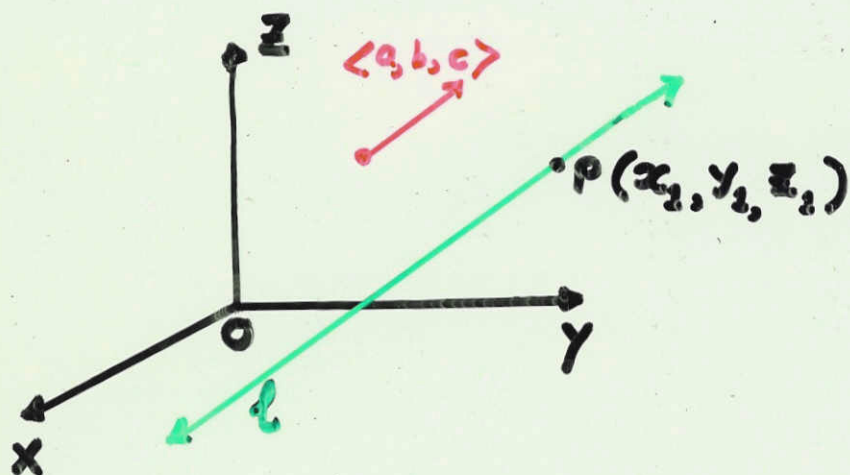


EQUATION OF A LINE IN SPACE



Suppose (x_1, y_1, z_1) is a point on line l .
Suppose further that $\langle a, b, c \rangle$ is a vector parallel to the line l .

Then the equation of the line l can be written in two different forms:

parametric form

$$\left. \begin{aligned} x &= x_1 + at \\ y &= y_1 + bt \\ z &= z_1 + ct \end{aligned} \right\} \begin{array}{l} \text{where} \\ t \text{ is a} \\ \text{real} \\ \text{parameter} \end{array}$$

Symmetric form

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

proof: