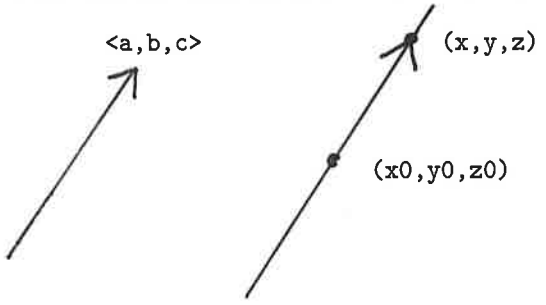
1. Equations of a line through $(x_0, y_0, z_0,)$ parallel to $< a, b, c >$.

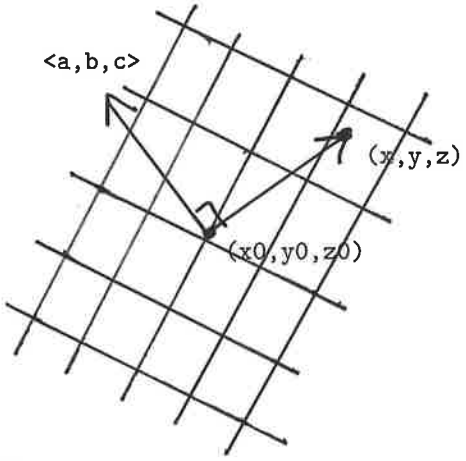


$< x - x_0, y - y_0, z - z_0 > \| < a, b, c >$

$< x - x_0, y - y_0, z - z_0 >= t < a, b, c >$

$$\begin{aligned} x &= x_0 + at \\ y &= y_0 + bt \\ z &= z_0 + ct \end{aligned}$$

2. Equation of a plane through (x_0, y_0, z_0), normal to $< a, b, c >$.



$< x - x_0, y - y_0, z - z_0 > \perp < a, b, c >$

$< x - x_0, y - y_0, z - z_0 > \bullet < a, b, c >= 0$

$$a(x - x_0) + b(y - y_0) + c(z - z_0) = 0$$

$ax + by + cz = d$, where $d = ax_0 + by_0 + cz_0$.