

$$49. P(x_0, y_0, z_0) = \langle 5, 5, 2 \rangle$$

$$v(a, b, c) = \langle 0, -2, 1 \rangle$$

$$r(t) = b + vt$$

$$r_1(t) = \langle 5, 5, 2 \rangle + t \langle 0, -2, 1 \rangle$$

$$r_2(t) = \langle 5, 5, 2 \rangle + t \langle 0, -20, 10 \rangle$$

$$51. r_1(t) = \langle -1, 2, 2 \rangle + t \langle 4, -2, 1 \rangle \quad r_2(t) = \langle 0, 1, 1 \rangle + t \langle 2, 0, 1 \rangle$$

$$\langle -1, 2, 2 \rangle + t \langle 4, -2, 1 \rangle = \langle 0, 1, 1 \rangle + t \langle 2, 0, 1 \rangle$$

$$\langle -1+4t, 2-2t, 2+t \rangle = \langle 2t, 1, 1+t \rangle$$

$$2-2t = 1$$

$$t = \frac{1}{2}$$

$$-1+4t = 2t$$

$$-1+4\left(\frac{1}{2}\right) = 2t$$

$$1 = 2t$$

$$t = \frac{1}{2}$$

$$\rightarrow 2+t = 1+t$$

$$2 + \frac{1}{2} \neq 1 + \frac{1}{2}$$

therefore, lines do not intersect.