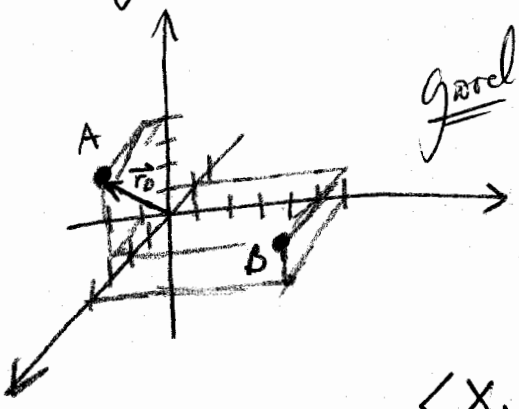
1. Find a vector equation for the line segment from $(2, -1, 4)$ to $(4, 6, 1)$.



good!

Let $\vec{r}_0 = \langle 2, -1, 4 \rangle$

then $\vec{v} = \overrightarrow{AB} = \langle 4-2, 6+1, 1-4 \rangle$

$= \langle 2, 7, -3 \rangle$ ok.

↑ vector, not a point.

$\langle x, y, z \rangle = \vec{r} = \vec{r}_0 + t\vec{v}$

$\langle x, y, z \rangle = \langle 2, -1, 4 \rangle + t\langle 2, 7, -3 \rangle$

$\langle x, y, z \rangle = (2+2t)\vec{i} + (7t-1)\vec{j} + (4-3t)\vec{k}$

2. Find the plane that passes through the origin and is parallel to the plane $2x - y + 3z = 1$.

$2x - y + 3z = 1$

$\vec{n} = \langle 2, -1, 3 \rangle$ because planes are ||, they share the same normal. good!

Great job!

$pt = (0, 0, 0)$

$\therefore \quad \vec{v} \qquad \vec{n}$

$\langle x-0, y-0, z-0 \rangle \cdot \langle 2, -1, 3 \rangle = 0$

because the dot product of two ⊥ vectors is zero good!!

$\langle x, y, z \rangle \cdot \langle 2, -1, 3 \rangle = 0$

$2x - y + 3z = 0$