

5. Find the point of intersection of the following lines. **CHECK YOUR ANSWER!**

$$x+2=y+6=z+3 \quad \text{and} \quad \frac{x-7}{1} = \frac{y-7}{2} = \frac{z-14}{3}$$

Walk on the line on the left.

So $x=t-2$
 $y=t-6$
 $z=t-3$.

When are you on the line on the right?

In other words, when does

$$\frac{t-2-7}{1} = \frac{t-6-7}{2} = \frac{t-3-14}{3} \quad ?$$

when is $t-9 = \frac{t-13}{2}$

And $t-9 = \frac{t-17}{3}$

when is $2t-18 = t-13$

And $3t-17 = t-17$

when is $t=5$ And $2t=10$?

at $t=5$.

where are you?

$$\begin{aligned} x &= 5-2 = 3 \\ y &= 5-6 = -1 \\ z &= 5-3 = 2 \end{aligned}$$

(3, -1, 2)

✓: First line $5=5=5$ ✓

Second line $-4 = \frac{-8}{2} = \frac{-12}{3}$ ✓

6. Find the equations of any line which is contained on the plane $2x+3y+3z=12$.

$P=(6, 0, 0)$ and $Q=(0, 4, 0)$ are on the plane

The line which connects these points is on the plane

$$\vec{PQ} = -6\vec{i} + 4\vec{j}$$

My line is $\begin{cases} x=6-6t \\ y=0+4t \\ z=0 \end{cases}$