

equation of line joining $(1,1,1)$ and $(2,2,2)$

$$= \frac{x-1}{2-1} = \frac{y-1}{2-1} = \frac{z-1}{2-1} = a \text{ (say)} \Rightarrow x-1 = y-1 = z-1 = a$$

$$\Rightarrow \boxed{x = y = z = a+1} \text{ --- (1)}$$

now intersect with $x+y+z=9$

put $x=y=z=a+1$ in $x+y+z=9$

$$\Rightarrow a+1+a+1+a+1=9$$

$$3a+3=9$$

$$\boxed{a=2}$$

from (1)

$$x = y = z = 2+1 = 3$$

$\Rightarrow \underline{(3,3,3)}$ is intersection point $\angle$