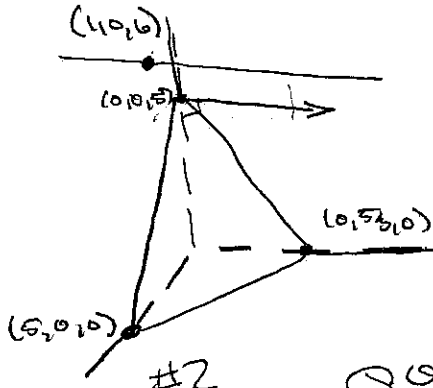


#1

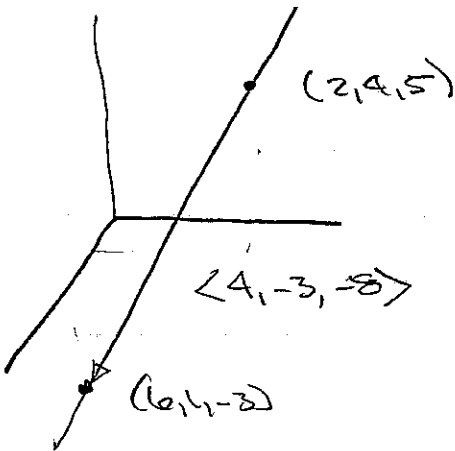
point $(1, 0, 6)$
direction is normal to plane $\langle 1, 3, 1 \rangle$



$$\begin{aligned} x &= 1 + t \\ y &= 3t \\ z &= 6 + t \end{aligned}$$

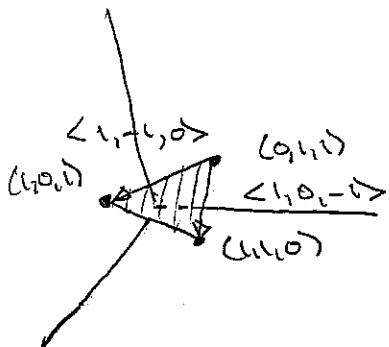
#2

point $(6, 1, -3)$ [or $(2, 4, 5)$]
direction $\langle 4, -3, -8 \rangle$ [or $\langle -4, 3, 8 \rangle$]



$$\begin{aligned} x &= 6 + 4t \\ y &= 1 - 3t \\ z &= -3 - 8t \end{aligned}$$

#3

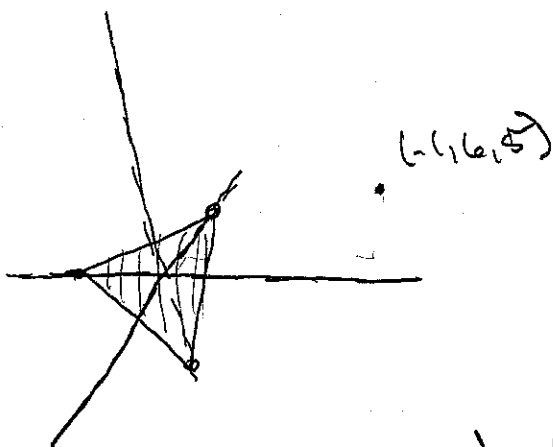


point $(0,1,1)$
 Normal $\langle 1, -1, 0 \rangle \times \langle 1, 0, -1 \rangle$
 $= \langle 1, 1, 1 \rangle$

$$x + (y-1) + (z-1) = 0$$

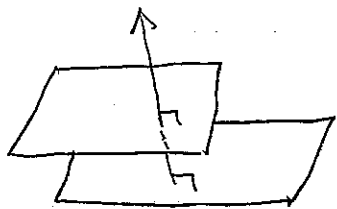
$$x + y + z = 2$$

#4



point $(-1, 0, 0)$

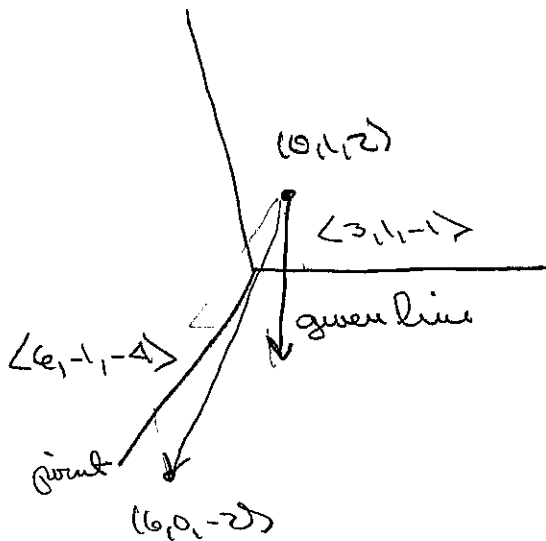
point $(-1, 0, 0)$
 normal is normal of given plane
 $\langle 1, 1, 1 \rangle$



$$(x+1) + (y-0) + (z+0) = 0$$

$$x + y + z = 0$$

#5



" $\langle 3, 1, -1 \rangle$ " lies in the plane."
Also, " $\langle 6, -1, -4 \rangle$ " lies in the plane."

Normal is $\langle 3, 1, -1 \rangle \times \langle 6, -1, -4 \rangle$
 $= \langle -5, 6, -9 \rangle$

$$-5(x-6) + 6(y-0) - 9(z+2) = 0$$

#6

$$\begin{aligned}x - y + 2z &= 9 \\(3-t) - (2+t) + 2(5t) &= 9 \\3 - t - 2 - t + 10t &= 9 \\1 + 8t &= 9 \\t &= 1\end{aligned}$$

joint

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