

#6) Write the symmetric equation for the line which passes through the point $C(-3, 5, -2)$ and is parallel to the line $x=4+2t$, $y=-1-3t$, $z=t$. (4pts)

$$\langle 2, -3, 1 \rangle$$

$$P(4, -1, 0)$$

$$\frac{x+3}{2} = \frac{y-5}{-3} = \frac{z+2}{1}$$

#7) Calculate the distance from the point $Q(2, 3, 4)$ to the line $x=1+t$, $y=t$, $z=4-t$. (5pts)

Point to
line

$$P=(1, 0, 4)$$

$$\vec{PQ} = \langle 1, 3, 0 \rangle$$

$$\vec{PR} = \langle 1, 1, -1 \rangle$$

$$\begin{vmatrix} 1 & 1 & 1 \\ 1 & 3 & 0 \\ 1 & 1 & -1 \end{vmatrix} = [(3 \cdot 1) - (0)] - [(-1 \cdot 1) + (0)] + [(1 \cdot 1) - (3 \cdot 1)]$$

$$= 3 - 0 + 1 + 0 - 2$$

$$= 2$$

$$\vec{PQ} = \langle 1, 3, 0 \rangle$$

$$\frac{\sqrt{9+1+4}}{\sqrt{1+1+1}}$$

$$\frac{\sqrt{14}}{\sqrt{3}}$$

$$(\sim 2.16)$$