#Quiz 3   Sammy (Zixin Qu)

Q1. let P be $(0,1,1)$ Q be $(1,0,1)$ R be $(1,1,0)$

$u = \vec{PQ} = PQ - P = (1,0,1) - (0,1,1) = (1,-1,0)$

$v = \vec{PR} = R - P = (1,1,0) - (0,1,1) = (1,0,-1)$

$\therefore CR = (1,-1,0) \times (1,0,-1) = \begin{vmatrix} i & j & k \\ 1 & -1 & 0 \\ 1 & 0 & -1 \end{vmatrix}$

$= (1-0)i \oplus - (-1-0)j + (0+1)k$

$= i + j + k = \cancel{(1,2,1)}$ $(1,1,1)$

let point Q be the favorite point.

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

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

$x + y + z = 2$

Q2. Find the intersect of the line $r(t) = (1,1,0) + t(0,2,4)$
and the plane $x + y + z = 14$

$r(t) = (1,1,0) + (0,2t,4t)$

$= (1, 1+2t, 4t)$

$\because x + y + z = 14$

$\therefore 1 + 1 + 2t + 4t = 14$

$6t = 12$

$t = 2$

so $r(t) = (1,5,8)$