§12.5 II #65

Thru $A(0,1,2)$, $\parallel$ to $x+y+z=2$,

$\perp$ to $\langle t+1, -t+1, 2t \rangle$

$\bar{n} = \langle 1,1,1 \rangle, 1, 1$

$\bar{v} = \langle 1,-1,2 \rangle, 1, -1$

$\bar{n} \times \bar{v} = \langle 3, -1, -2 \rangle$

So $\langle 0,1,2 \rangle + t\langle 3,-1,-2 \rangle$

$\boxed{\bar{r} = \langle 3t, -t+1, -2t+2 \rangle}$

$\bar{n} \cdot \bar{u} = 0 \Longrightarrow \langle 1,1,1 \rangle \cdot \langle v_1, v_2, v_3 \rangle$

$= v_1 + v_2 + v_3 = 0$

$\bar{v} \cdot \bar{u} = 0 \Longrightarrow \langle 1,-1,2 \rangle \cdot \langle v_1, v_2, v_3 \rangle$

$= v_1 - v_2 + 2v_3 = 0$

$\Longrightarrow v_1 = v_2 - 2v_3 \Longrightarrow$

$v_1 + v_2 + v_3 = v_2 - 2v_3 + v_2 + v_3 = 0$

$\Longrightarrow 2v_2 - v_3 = 0$

$\Longrightarrow v_3 = 2v_2$

$v_1 + v_2 + 2v_2 = 0$

$v_1 = -3v_2$

Let $v_2 = 1 \Longrightarrow$

$\langle v_1, v_2, v_3 \rangle = \langle -3, 1, 2 \rangle$

$\bar{r}_0 = \langle 0, 1, 2 \rangle \Longrightarrow$

$\bar{r} = \langle -3t, t+1, 2t+2 \rangle$