Problem 7. (10 pts) Parametrize the line through $P(1, 2, 0)$ and $Q(1, 3, -1)$.

$$\overrightarrow{PQ} = \langle 0, 1, -1 \rangle$$

$$\begin{cases} x = 1 \\ y = 2 + t \\ z = -t \end{cases} \qquad (t \in \mathbb{R})$$

Problem 8. (10 pts) Find the equation of the plane that contains the lines $L_1 : x = 2t + 1,\ y = 3t + 2,\ z = 4t + 3$ and $L_2 : x = s + 2,\ y = 2s + 4,\ z = -4s - 1$.

DIRECTION OF L_1: $\vec{v}_1 = \langle 2, 3, 4 \rangle$

——— . L_2: $\vec{v}_2 = \langle 1, 2, -4 \rangle$

$\vec{v}_1 \times \vec{v}_2 = \langle -20, 12, 1 \rangle \perp$ PLANE

POINT ON THE PLANE: $L_1(0) = (1, 2, 3)$

$$-20(x-1) + 12(y-2) + (z-3) = 0$$