6. a) $(3, 0, 1)$

b) $L \subset \pi$
(line is contained into plane)

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7. a) coincident planes

b) no intersection
(parallel and distinct planes)

c) $\vec{r} = \left(-\frac{5}{2}, 0, \frac{1}{2}\right) + t(-2, 1, 0)$

7. Find the equation of the line of intersection for each pair of planes (if it exists).

a) $\pi_1: 2x - 3y + z - 1 = 0$, $\pi_2: 4x - 6y + 2z - 2 = 0$

b) $\pi_1: 3x + 6y - 9z - 3 = 0$, $\pi_2: 2x + 4y - 6z - 4 = 0$

c) $\pi_1: x + 2y + 3z + 1 = 0$, $\pi_2: x + 2y + z + 2 = 0$

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8. a) 44.42°

b) 90°

8. Find the angle between each pair of planes.

a) $\pi_1: x + 2y + 3z + 1 = 0$, $\pi_2: 3x + 2y + z + 2 = 0$

b) $\pi_1: x + y + z + 1 = 0$, $\pi_2: x - y - 1 = 0$

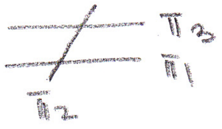
9.

1) $P(2, 1, 4)$; $\vec{n_1} \cdot (\vec{u_2} \times \vec{u_3}) \neq 0$

2) $\vec{r} = (1, -3, 0) + t(-4, 2, 1)$
$\vec{n_1} \cdot (\vec{n_2} \times \vec{n_3}) = 0$ (coplanar normals)

3) coincident planes

4) no intersection
"H case"



9. Solve the following system of equations. Give a geometric interpretation of the result.

1) $\begin{cases} x - 3y - 2z = -9 \\ 2x - 5y + z = 3 \\ -3x + 6y + 2z = 8 \end{cases}$

2) $\begin{cases} x + y + 2z = -2 \\ 3x - y + 14z = 6 \\ x + 2y = -5 \end{cases}$

3) $\begin{cases} x - y + z + 1 = 0 \\ -2x + 2y - 2z - 2 = 0 \\ 3x - 3y + 3z + 3 = 0 \end{cases}$

4) $\begin{cases} x + y + z - 2 = 0 \\ x - y + z - 1 = 0 \\ 2x + 2y + 2z - 3 = 0 \end{cases}$