

Quiz for lecture 3.

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Section: 8:40-10:00 A.M.

1. Find the equation of the plane that passes through the points $(0, 1, 1)$, $(1, 0, 1)$, $(1, 1, 0)$.

Assume these points are A, B, C .

$$\overline{AB} = \langle 1, -1, 0 \rangle$$

$$\overline{BC} = \langle 0, 1, -1 \rangle$$

$$n = \overline{AB} \times \overline{BC} = \langle 1, 1, 1 \rangle$$

$$\langle 1, 1, 1 \rangle \cdot \langle x, y-1, z-1 \rangle = 0$$

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

$$x + y + z = 2$$

2. Find the intersection of the line $r(t) = \langle 1, 1, 0 \rangle + t \langle 0, 2, 4 \rangle$ and the plane $x + y + z = 14$.

$$r(t) = \langle 1, 2t+1, 4t \rangle$$

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

$$t = 2$$

$$x = 1, y = 2 \times 2 + 1 = 5, z = 2 \times 4 = 8$$

\therefore the point is $(1, 5, 8)$.

