Planes

Ex 1.

Provide the general and normal equation of the plane passing through point $A(1,0,2)$ and with the normal vector $\mathbf{n} = [2, -1,1]$.

Ex 2.

Find the equation of the plane passing through points $A(1,0,0)$, $B(0,1,0)$, and $C(0,0,1)$.

Ex 3.

Determine the angle between the planes: $\pi_1 : x + 2y - 2z + 1 = 0$ and $\pi_2 : 2x - y + z - 3 = 0$.

Ex 4.

For the plane $\pi : x - 2y + 2z - 4 = 0$, calculate the distance of point $P(3,0,1)$ from this plane.

Ex 5.

Find a vector perpendicular to the plane $x + y + z = 1$.

Ex 6.

A plane passes through point $A(1, 2, 3)$ and is parallel to the plane $2x + 3y + 4z = 5$. Find the equation of this plane.

Ex 7.

$\star$ Find the equation of the plane passing through point $D(1,1,1)$ and containing the line passing through points $E(0,0,0)$ and $F(1,2,3)$.