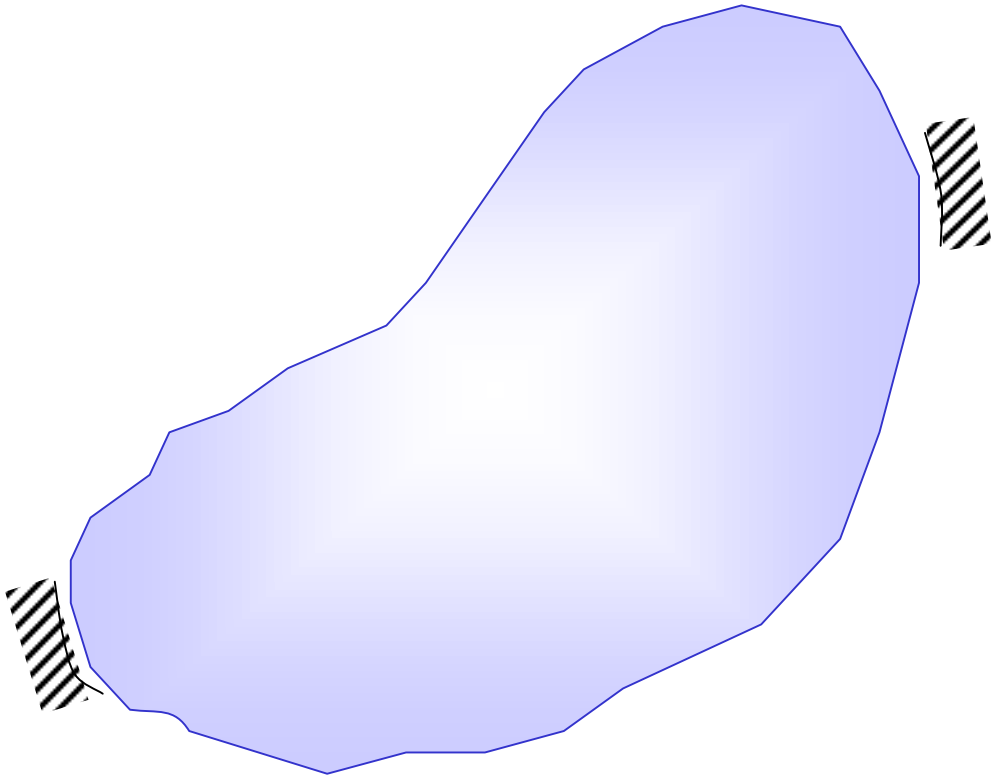
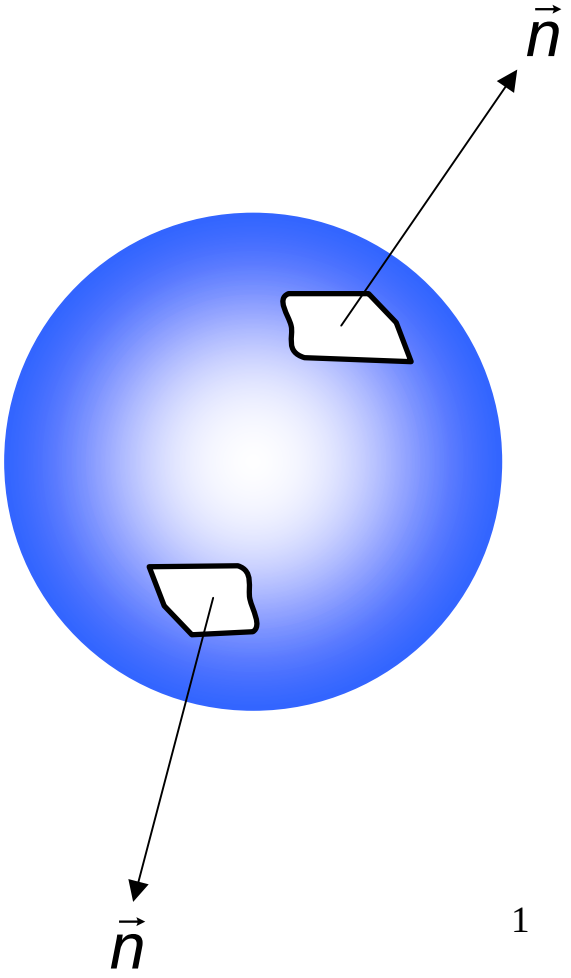
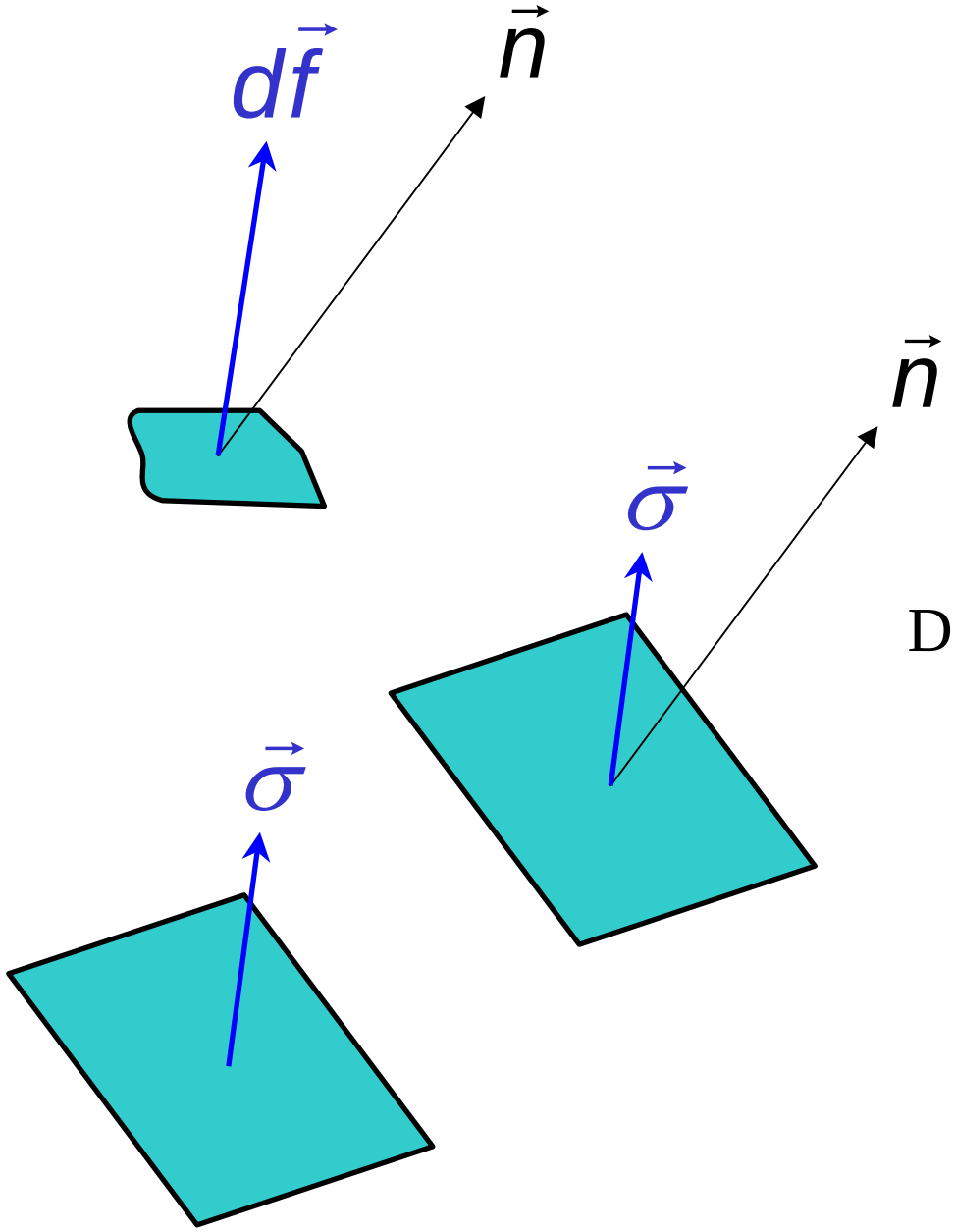
VECTOR TENSIÓN





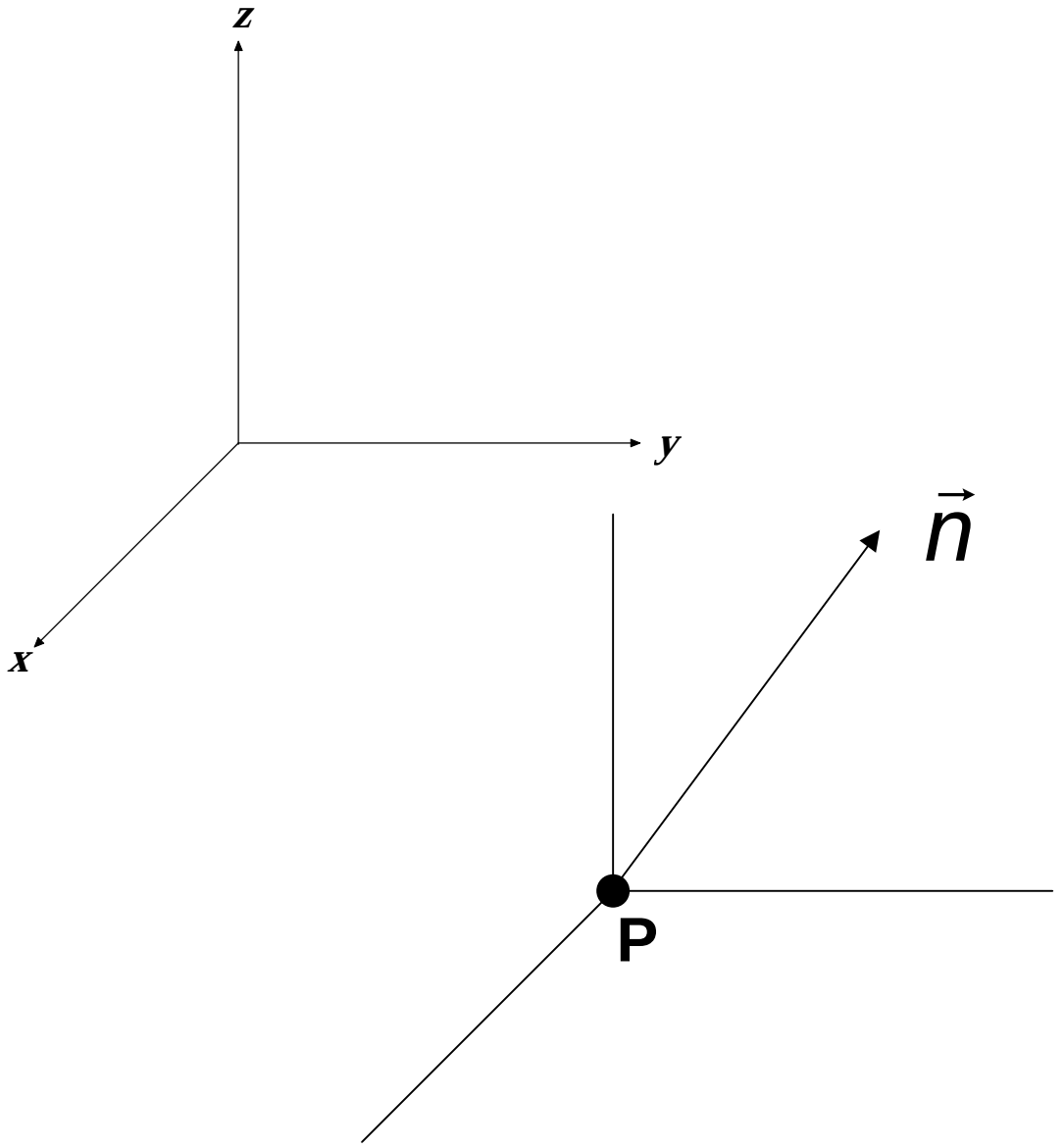
VECTOR TENSIÓN



Depende de:

ORIENTACIÓN

$$\vec{n} = \begin{pmatrix} \alpha \\ \beta \\ \gamma \end{pmatrix}$$

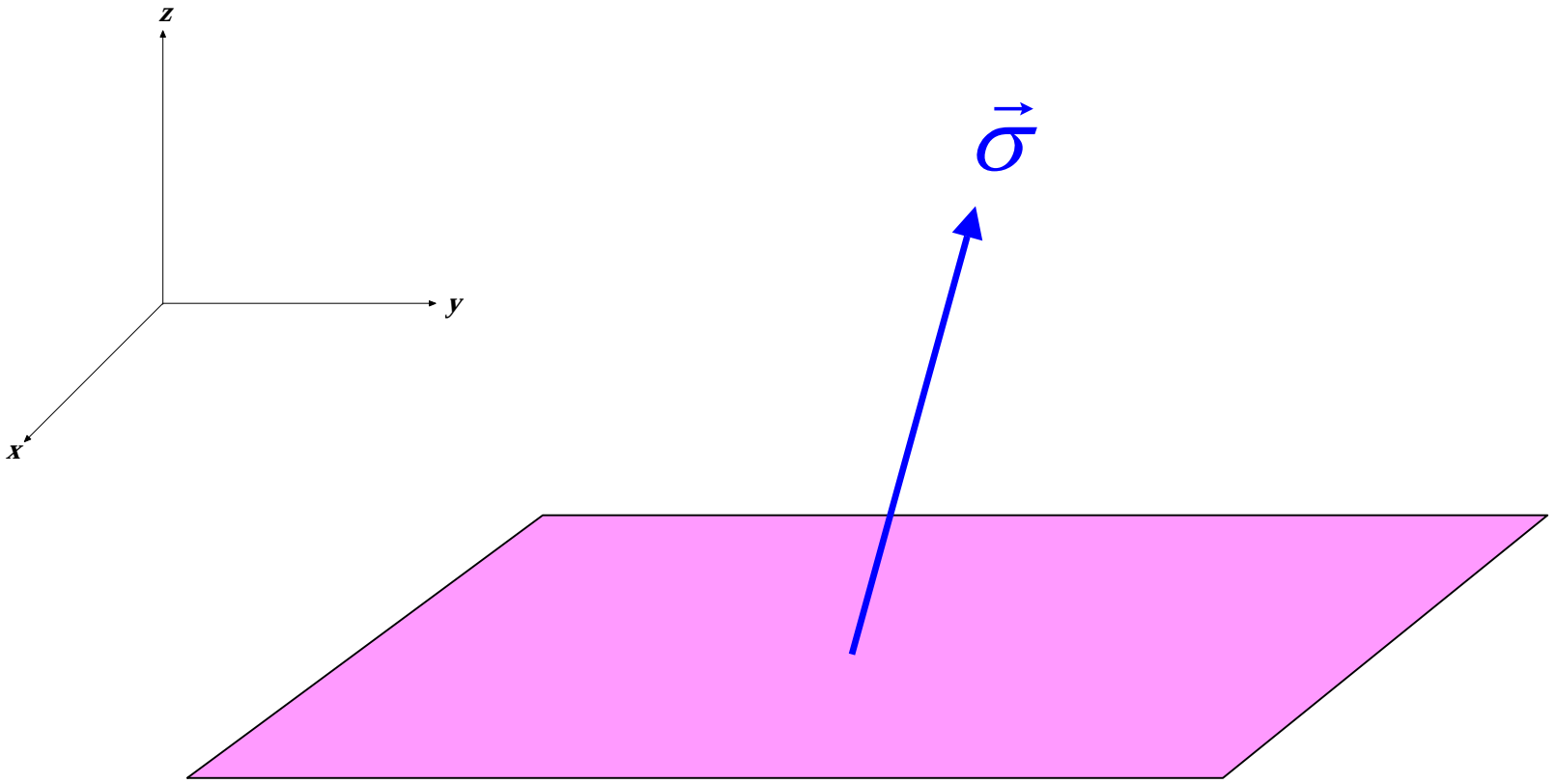


$$\alpha =$$

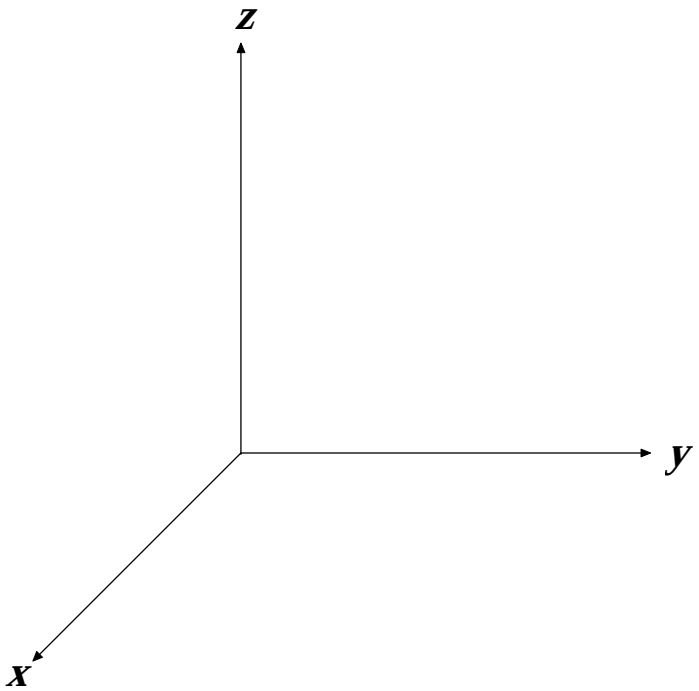
$$\beta =$$

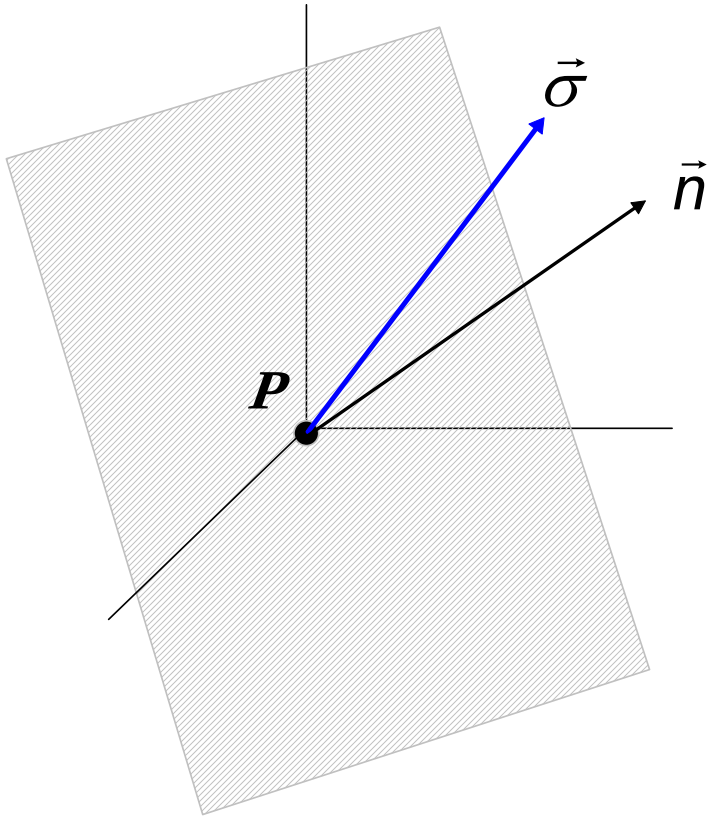
$$\gamma =$$

VECTOR TENSIÓN PARA LOS PLANOS COORDENADOS

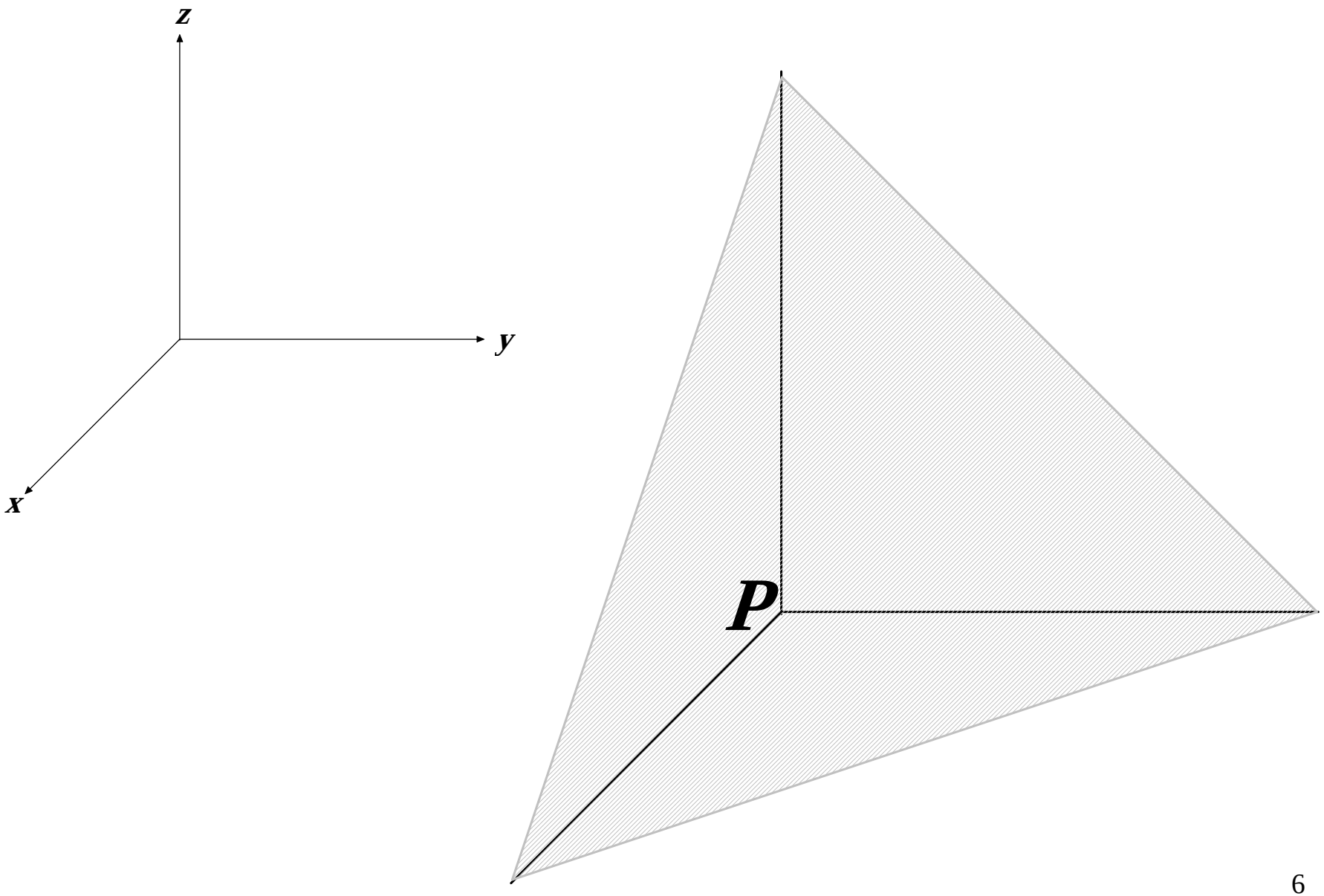


VECTOR TENSIÓN PARA UNA ORIENTACIÓN CUALQUIERA: MATRIZ DE TENSIONES



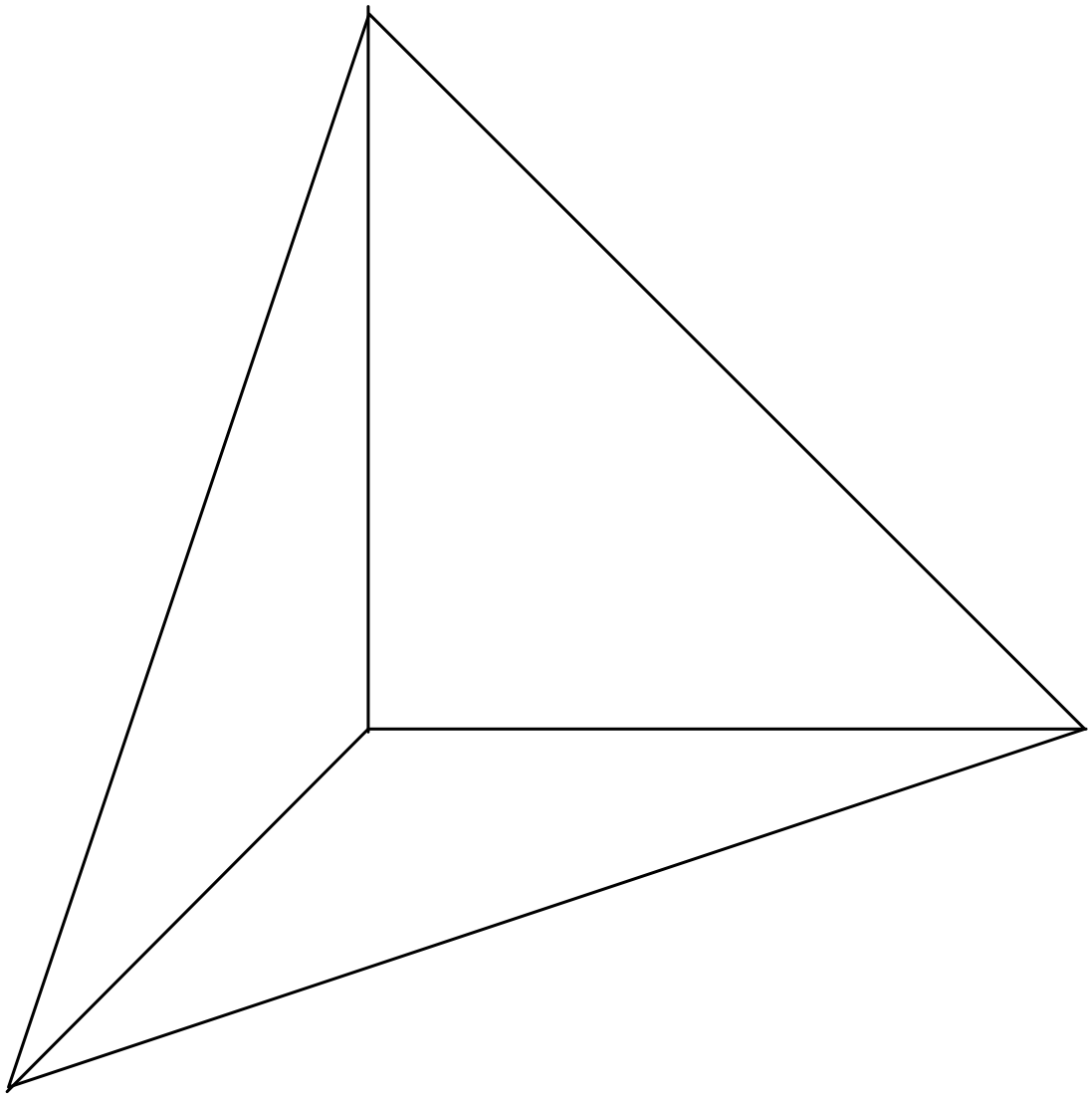


EQUILIBRIO EN UN TETRAEDRO DIFERENCIAL

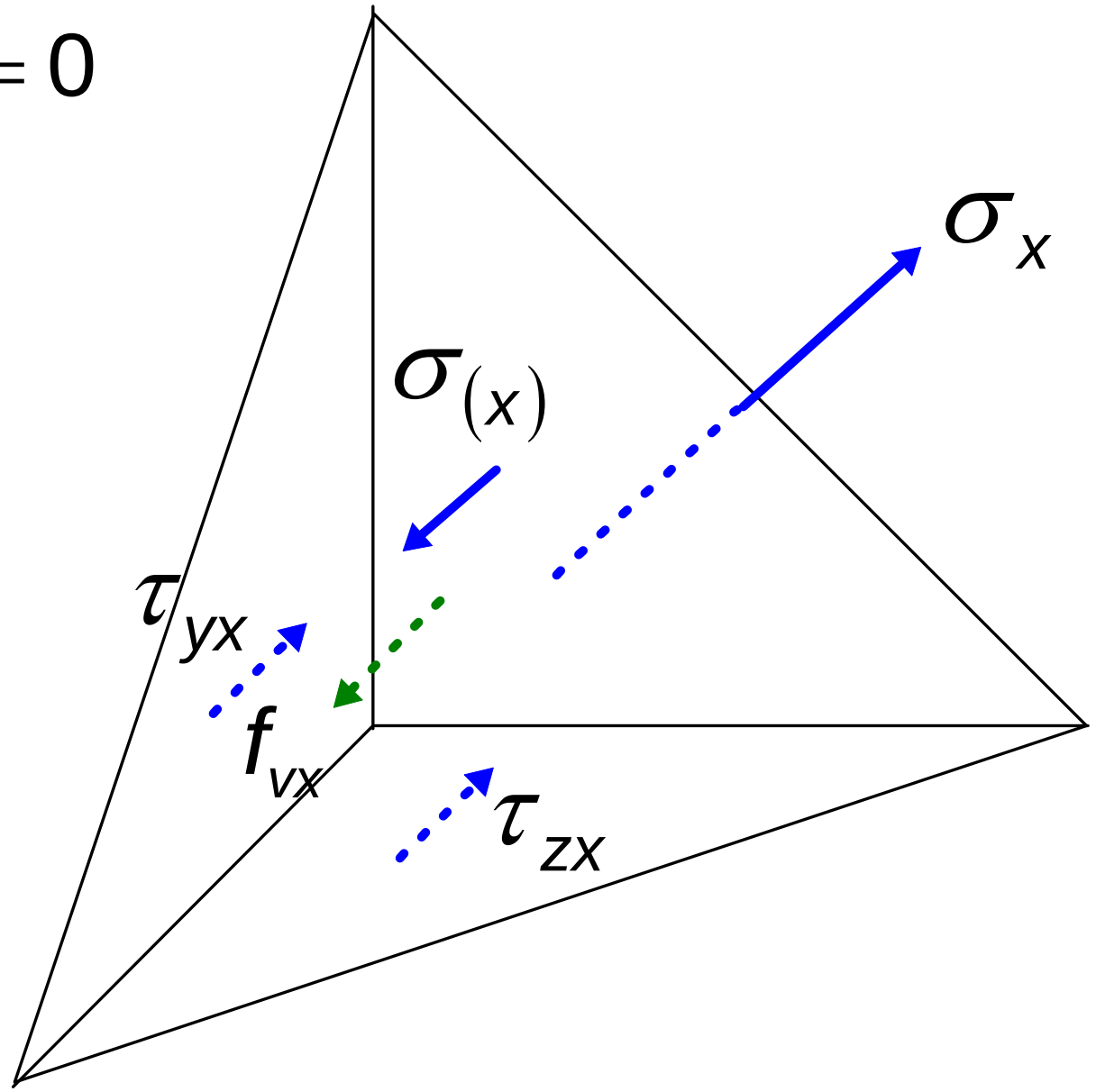


EQUILIBRIO DE FUERZAS

$$\sum \vec{F} = \vec{0} \longrightarrow \begin{cases} \sum F_{(x)} = 0 \\ \sum F_{(y)} = 0 \\ \sum F_{(z)} = 0 \end{cases}$$

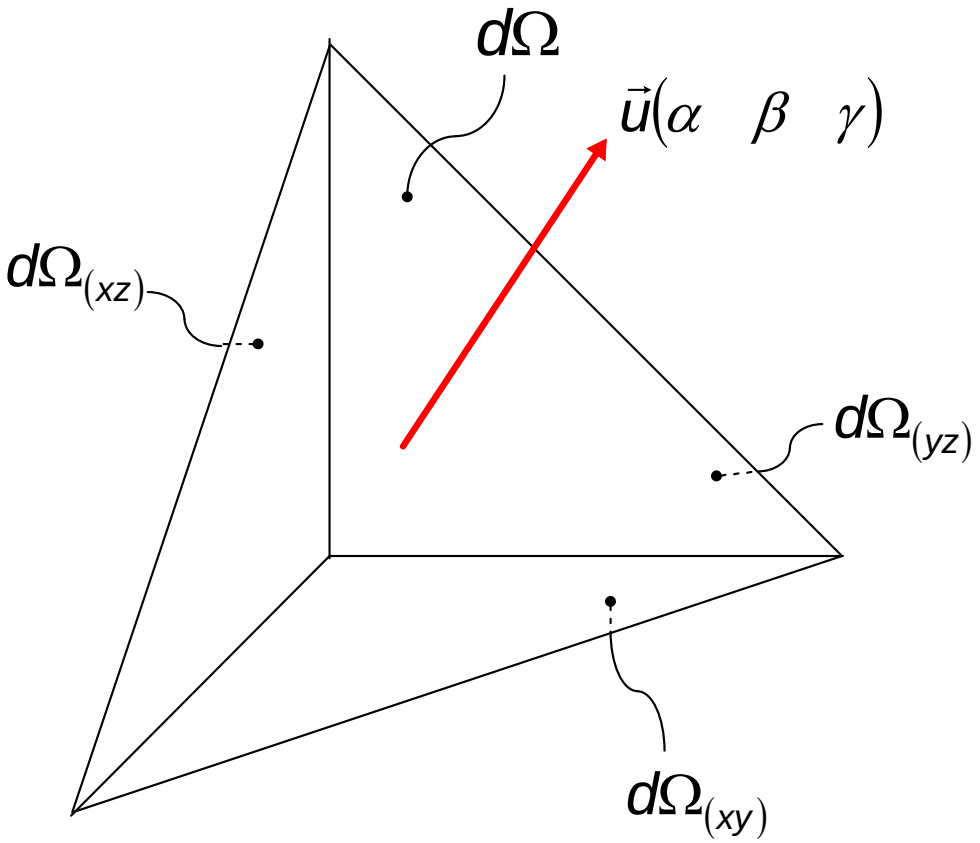


$$\sum F_{(x)} = 0$$



$$\sum F_x = 0$$

$$= 0$$


$d\Omega$
$\vec{u}(\alpha \quad \beta \quad \gamma)$
$d\Omega_{(xz)}$
$d\Omega_{(yz)}$
$d\Omega_{(xy)}$

Sustituyendo: $\sum F_x = 0 \rightarrow$

Hay otras dos ecuaciones de equilibrio:

$$\sum F_Y = 0 \rightarrow \quad \sigma_{(y)} = \tau_{xy}\alpha + \sigma_y\beta + \tau_{zy}\gamma$$

$$\sum F_z = 0 \rightarrow \quad \sigma_{(z)} = \tau_{xz}\alpha + \tau_{yz}\beta + \sigma_z\gamma$$

En formato matricial:

$$\begin{pmatrix} \sigma_{(x)} \\ \sigma_{(y)} \\ \sigma_{(z)} \end{pmatrix} = \begin{pmatrix} \sigma_x & \tau_{yx} & \tau_{zx} \\ \tau_{xy} & \sigma_y & \tau_{yz} \\ \tau_{xz} & \tau_{yz} & \sigma_z \end{pmatrix} \begin{pmatrix} \alpha \\ \beta \\ \gamma \end{pmatrix}$$

Abreviado: