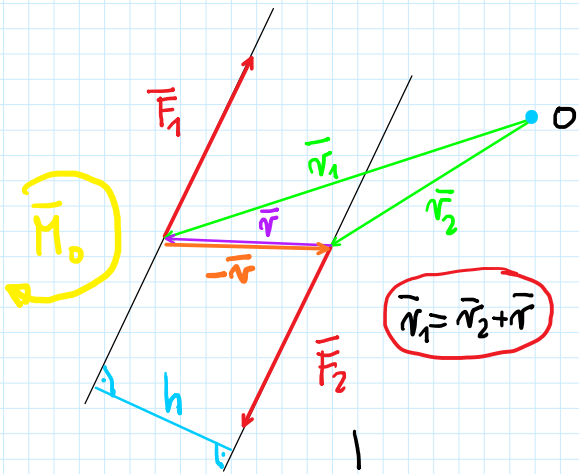


MOMENT PARY SIŁ



$$\vec{M}_0 = \sum \vec{M}_{0i} = \vec{M}_0(\vec{F}_1) + \vec{M}_0(\vec{F}_2)$$

$$\vec{M}_0(\vec{F}_1) = \vec{r}_1 \times \vec{F}_1$$

$$\vec{M}_0(\vec{F}_2) = \vec{r}_2 \times \vec{F}_2$$

$$\vec{F}_1 = -\vec{F}_2$$

$$\vec{F}_1 \parallel \vec{F}_2$$

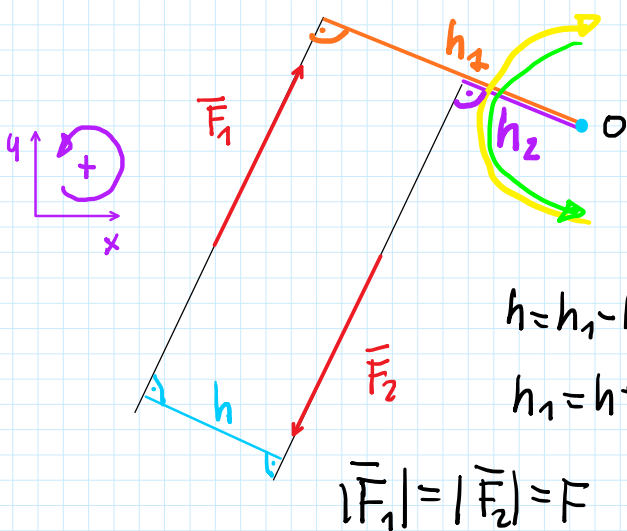
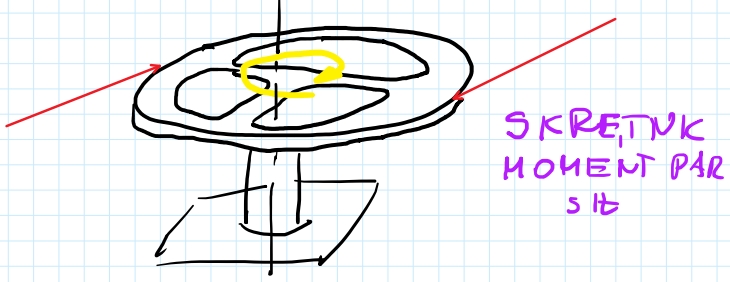
$$|\vec{F}_1| = |\vec{F}_2| = F$$

$$\vec{M}_0 = \vec{r}_1 \times \vec{F}_1 + \vec{r}_2 \times \vec{F}_2 = (\vec{r}_2 + \vec{r}) \times \vec{F}_1 + \vec{r}_2 \times \vec{F}_2 =$$

$$= -\vec{r}_2 \times \vec{F}_2 - \vec{r} \times \vec{F}_2 + \vec{r}_2 \times \vec{F}_2 = -\vec{r} \times \vec{F}_2$$

$$= \vec{r}_2 \times \vec{F}_1 + \vec{r} \times \vec{F}_1 - \vec{r}_2 \times \vec{F}_1 = \vec{r} \times \vec{F}_1$$

$$\vec{r}_1 = \vec{r}_2 + \vec{r}$$



$$|\vec{M}_0| = M_0 = -F_1 \cdot h_1 + F_2 \cdot h_2 =$$

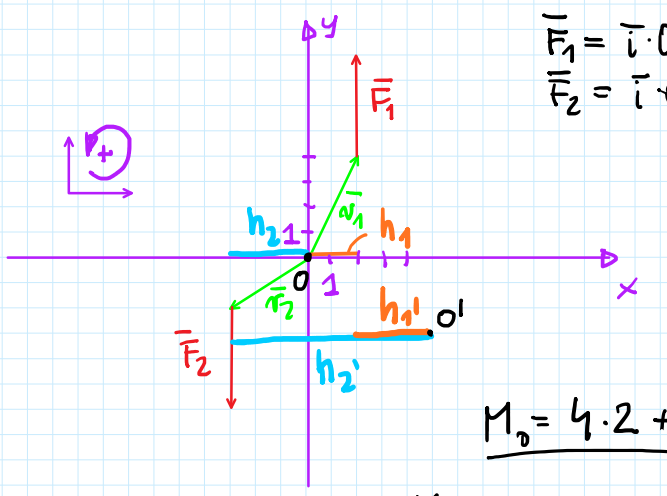
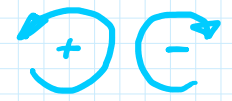
$$= -F_1 \cdot (h + h_2) + F_2 \cdot h_2 =$$

$$= -F \cdot h - F \cdot h_2 + F \cdot h_2 = -F \cdot h$$

$$h = h_1 - h_2$$

$$h_1 = h + h_2$$

$$|\vec{F}_1| = |\vec{F}_2| = F$$



$$\vec{F}_1 = \vec{i} \cdot 0 + \vec{j} \cdot 4 + \vec{k} \cdot 0 \quad \left| \quad \vec{r}_1 = \vec{i} \cdot 2 + \vec{j} \cdot 4 + \vec{k} \cdot 0 \right.$$

$$\vec{F}_2 = \vec{i} \cdot 0 + \vec{j} \cdot (-4) + \vec{k} \cdot 0 \quad \left| \quad \vec{r}_2 = \vec{i} \cdot (-3) + \vec{j} \cdot (-2) + \vec{k} \cdot 0 \right.$$

$$\vec{M}_0 = \begin{vmatrix} \vec{i} & \vec{j} & \vec{k} \\ 2 & 4 & 0 \\ 0 & -4 & 0 \end{vmatrix} + \begin{vmatrix} \vec{i} & \vec{j} & \vec{k} \\ -3 & -2 & 0 \\ 0 & -4 & 0 \end{vmatrix} = \dots$$

$$M_0 = 4 \cdot 2 + 4 \cdot 3 = 20$$

$$M_{0'} = -4 \cdot 3 + 4 \cdot 8 = 20$$

$$F_1 \cdot h = F_2 \cdot h'$$

