

Problemas sobre el teorema de Varignon

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F4-12. If $F = (100i - 120j + 75k)$ lb and $F_2 = -200i + 250j + 100k$ lb, determine the resultant moment produced by these forces about point O. Express the result as a Cartesian vector.

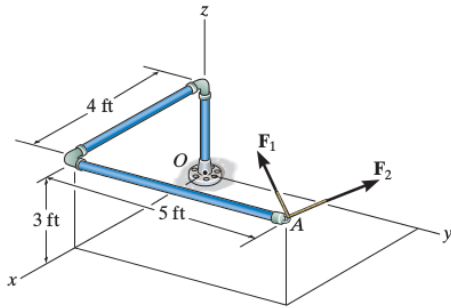


Figura 1. Este es un subtítulo

$$F_1 = (100i - 120j + 75k) \text{ lb}$$

$$F_2 = (-200i + 250j + 100k) \text{ lb}$$

Determina el momento de la fuerza resultante producido por esas fuerzas en el punto O.

$$\vec{M}_O = \vec{r} \times \vec{F}$$

$$\vec{r}_1 = 0i + 0j + 0k$$

$$\vec{r}_2 = 4i + 5j - 3k$$

$$\vec{r}_A \times \vec{F}_1 = 0i + 0j + 0k$$

$$\vec{r}_B \times \vec{F}_2 = i(875 - 390) - j(700 - (-300)) + k(500 + (520))$$

$$485i - 1000j + 1020k$$

4-14 Two boys push on the gate as shown. If the boy at B exerts a force of 30 lb, determine the magnitude of the force F_A the boy at A must exert in order to prevent the gate from turning. Neglect the thickness of the gate.

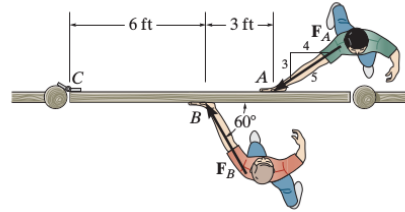


Figura 2. This is a caption

Para evitar que la puerta gire, el momento resultante sobre

$$+ MR_c = \Sigma Fd$$

$$MR_c = 0 = 30 \sin 60 (6) - FA \left(\frac{3}{5}\right) (9)$$

$$0 = 30 \sin 60 (6) - FA \left(\frac{3}{5}\right) (9)$$

$$-30 \sin 60 (6) = -FA \left(\frac{3}{5}\right) (9)$$

$$\frac{-30 \sin 60 (6)}{\frac{27}{5}} = -FA \left(\frac{27}{5}\right)$$

$$-28,86 = -FA$$

$$FA = 28,86 \text{ lb}$$