

Title

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Problema 1.

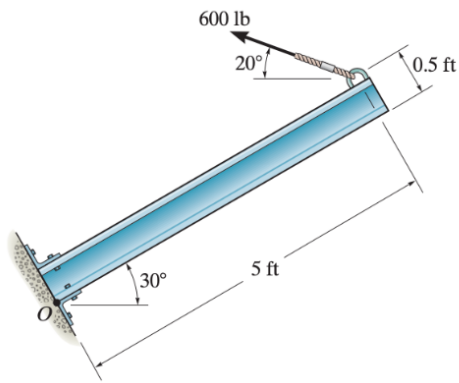


Figure 1: .

$$rx = 5 \text{ ft}$$

$$ry = 0.5 \text{ ft}$$

$$Fx = -600 \cos 50$$

$$Fy = 600 \sin 50$$

Se calcula el momento $\vec{M} = \vec{r} \times \vec{F}$

$$\vec{M}_O = [5 (600 \sin 50) + 0.5 (600 \cos 50)] = 2490.9612 \text{ lb} \cdot \text{ft}$$

Problema 2.

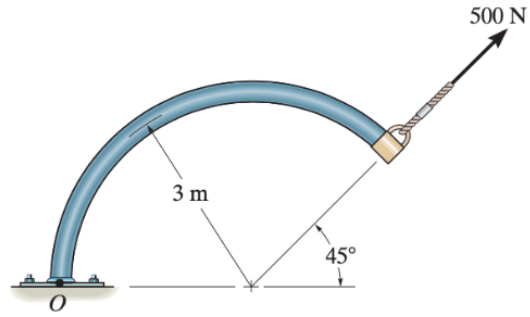


Figure 2: $F_x = 500 \cos 45 = 353.5 N$.

$$rx = 3 + 3 \cos 45 = 5.12 \text{ m}$$

$$ry = 3 \sin 45 = 2.12 \text{ m}$$

$$F_x = 500 \cos 45 = 353.5 \text{ N}$$

$$F_y = 500 \sin 45 = 353.5 \text{ N}$$

$$\vec{M}_O = (rx \cdot F_y - ry \cdot F_x)$$

Se calcula el momento.

$$\vec{M}_O = [(5.12)(353.5) - (2.12)(353.5)] = 1060.5 \text{ Nm}$$

Problema 3.

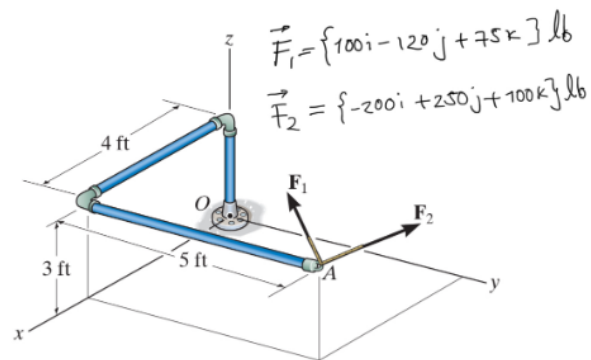


Figure 3: .

Sacamos el valor de $\vec{r}$

$$\vec{r} = (4, 5, 3) = 4i + 5j + 3k$$

Para F1:

$$\begin{array}{ccc} i & j & k \\ 4 & 5 & 3 \\ 100 & -120 & 75 \end{array}$$

$$\vec{M}_{F1} = ((5)(75) - (3)(-120))i - ((4)(75) - (3)(100))j + ((4)(-120) - (5)(100))k$$

$$\vec{M}_{F1} = (375 + 360)i - (300 - 300)j + (-480 - 500)k = 735i - 980k$$

Para F2:

$$\begin{array}{ccc} i & j & k \\ 4 & 5 & 3 \\ -200 & 250 & 100 \end{array}$$

$$\vec{M}_{F2} = ((5)(100) - (3)(250))i - ((4)(100) - (3)(-200))j + ((4)(250) - (5)(-200))k .$$

$$\vec{M}_{F2} = (500 - 750)i - (400 + 600)j + (1000 + 1000)k = -250i - 1000j + 2000k$$

Se suman las dos fuerzas.

$$\vec{M}_O = 735i - 250i - 1000j + 2000k - 980k = 485i - 1000j + 1020k$$