

Informe de solución de problemas sobre el momento de una fuerza

Jessica Aide Quirino-Murillo ¹

¹Instituto Tecnológico Superior Zacatecas Occidente

March 27, 2020

Instrucciones Determine el momento de la(s) fuerza(s) en el punto O para cada uno de los problemas.

Problema #1

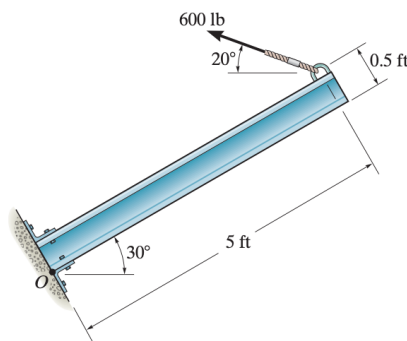


Figure 1: This is a caption

$$rx = 5ft + 0.5 + \cos 30$$

$$ry = 0.5ft \sin 30$$

$$fx = 600 lb \cos 20$$

$$fy = 600 lb \sin 20$$

$$M_o = (rx Fy - ry Fx)$$

$$= \{(5.43)(205.21) - (0.25)(563.81)\}$$

$$(1,114.29) - (140.95)$$

$$M_o = 973.34 \text{ MN}$$

Problema #2

FORMULAS

$$M_O = R \times F \quad (3D)$$

$$M_O = (Rx - RyFx) \quad (2D)$$

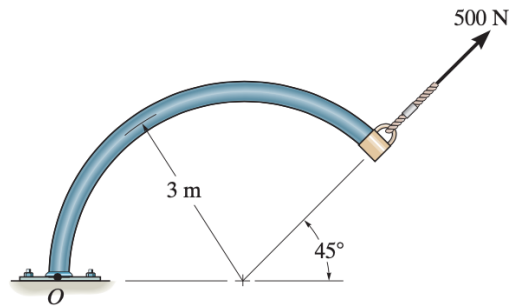


Figure 2: This is a caption

Solución para hacer el calculo de M,N y $\cos 45$ tomamos R Y F

$$rx \quad ry \quad fx \quad fy$$

$$ry = 3n + 3m \cos 45$$

para ry

$$3 + \sin 45$$

$$fx = 500N \cos 45$$

$$fy = 500N \sin 45$$

$$M_O = (rx \quad fy - ry \quad fx) \quad k$$

$$= (1060.66) \quad N.M$$

Problema #3

Determinar el momento resultante de las fuerzas que estan en el punto 0 expresadas en el plano cartesiano.

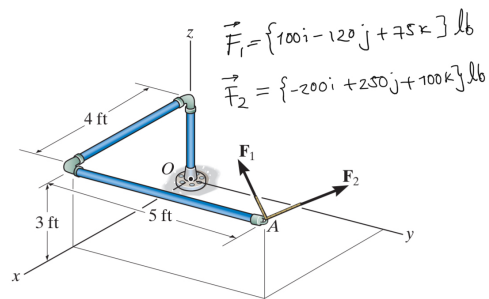


Figure 3: This is a caption

$$M_o = f1 = rxF1 = 100i - 120k + 175k$$

$$f2 = -200i + 250j + 100k$$

$$fr = -100i + 130j + 175k$$

$$r = 4i + 5j + 3k$$

$$M_o = \{4i - 100j + 130k\} + 3175i$$

$$\{(5*175) - (130*3)\} = 485i \quad j \{(4*175) - \{3*(-100)\} = 1000j \quad k \{(4*130) - (100*5)\} = 1020k$$

$$M_O = rx \quad FF1 = 100i - 120j + 75k \quad F2 = 200i + 250j + 100k$$

$$fr = -100i + 130j + 175k$$

$$r = 4i + 5j + 3k$$

$$M_o = \{453 - 100i, 130j, 175k\} = i \quad \{(5*175) - (130*3)\} = 485i \quad j \{(4*175) - 3*(-100)\} = 1000j \quad k \{(4*130) - (5*(-100))\} = 1020k$$

$$M_o = 485i - 1000j + 1020k.$$