

Problemas sobre fuerzas

Jessica Aide Quirino-Murillo, Instituto Tecnológico Superior Zacatecas Occidente

Angel Osvaldo Quirino-Murillo, Affiliation not available

Yeni Araceli Reyes-Lopez, Instituto Tecnológico Superior Zacatecas Occidente

Instrucciones: resuelva los siguientes problemas

Problem 1. The diagram below depicts a force that makes an angle to the horizontal. This force will have horizontal and vertical components.

respuesta : es la D

2. Three sailboats are shown below. Each sailboat experiences the same amount of force, yet has different sail orientations. In which case (A, B or C) is the sailboat most likely to tip over sideways? Explain.

ANSWER: La letra C es la mas propensa a quedar a un costado ya que esta mas abajo y cerca del suelo

Problem 3. Consider the tow truck below. If the tensional force in the cable is 1000 N and if the cable makes a 60-degree angle with the horizontal, then what is the vertical component of force that lifts the car off the ground?

$$\begin{aligned} F_Y &= F \sin \theta = F \sin 60^\circ \\ &= (1000) \sin 60^\circ \\ &= 800 \text{ N} \\ F_X &= F \cos 60^\circ = (1000) \cos 60^\circ \\ &= 500 \end{aligned}$$

1 Problem 4. After its most recent delivery, the infamous stork announces the good news. If the sign has a mass of 10 kg, then what is the tensional force in each cable? Use trigonometric functions and a sketch to assist in the solution.

$$W = (10 \text{ kg})(9.81 \text{ m/s}^2) = 98.1$$

SOLUCION:

EN 2D

$$T_X: T \cos \theta$$

$$\sum F_X = 0$$

$$T_Y: T \sin \theta$$

$$\sum F_Y = 0$$

$$\sum F_X$$



Fig. 1. This is a caption

TX-TY
 ΣF_Y
 $T_Y + T_Y + W = 0$
 $T_{SH0} + T_{SH0} - 98.1N$
 $T = 98.1N / 25 = 98.1N / 25H0 = 56.63$