

NAME

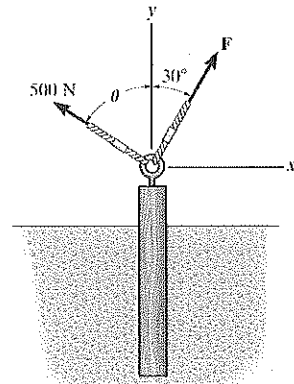
DATE

SOLUTIONS

PROBLEM AP-03

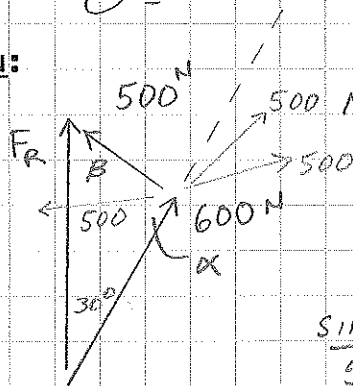
GIVEN:

Two forces act on the screw eye. If $F = 600\text{ N}$, determine the magnitude of the resultant force and the angle θ if the resultant force is directed vertically upward.

REQUIRED:

$$F_R =$$

$$\theta =$$

SOLUTION:

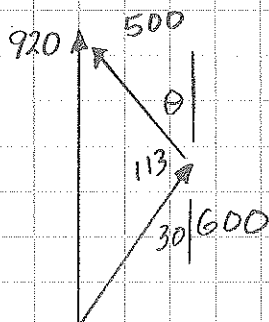
NOTE: AS THE 500 N FORCE ROTATES THRU ANGLE θ , ONLY ONE SOLUTION EXISTS THAT RESULTS IN F_R VERTICAL

$$\frac{\sin 30^\circ}{500} = \frac{\sin B}{600} = \frac{\sin \alpha}{F_R}$$

$$B = 36.87 \quad \alpha = 180 - 30 - B = 113.13^\circ$$

$$F_R = \frac{500 \sin 113.13}{\sin 30} = 919.6\text{ N}$$

$$\theta = 180 - 30 - 113.13 = 36.87 \text{ (SAME AS } B \text{)}$$



$$F_R = 920\text{ N}$$

$$\theta = 36.9^\circ$$