

PROBLEM AP-09

GIVEN:

Determine the magnitude of the projection of force
 $F = 600 \text{ N}$ along the u axis.

REQUIRED:

$$F_u = ?$$

SOLUTION:

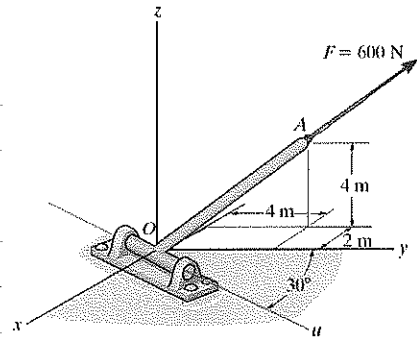
$$\hat{u}_u = \sin 30^\circ \hat{i} + \cos 30^\circ \hat{j}$$

$$\hat{u}_{OA} = -\frac{1}{3} \hat{i} + \frac{2}{3} \hat{j} + \frac{2}{3} \hat{k}$$

$$\vec{F} = F \hat{u}_{OA} = \{-200 \hat{i} + 400 \hat{j} + 400 \hat{k}\} \text{ N}$$

$$F_u = \vec{F} \cdot \hat{u}_u = 246 \text{ N}$$

$$F_L = \sqrt{600^2 - 246^2} = 547 \text{ N}$$



$$F_u = 246 \text{ N}$$