ENGR-2050
E.M. - STATICS

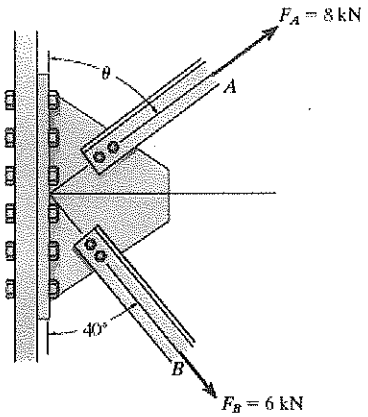
NAME DATE

SOLUTIONS

PROBLEM AP-02

GIVEN:

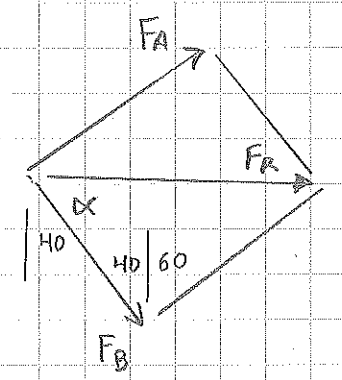
The plate is subjected to the two forces at A and B as shown. If $\theta = 60°$, determine the magnitude of the resultant of these two forces and its direction measured clockwise from the horizontal.



REQUIRED:

$\vec{F}_R$

SOLUTION:



$$F_R^2 = F_A^2 + F_B^2 - 2(F_A)(F_B)\cos(\not\angle)$$

$$= 8^2 + 6^2 - 2(8)(6)\cos 100$$

$$F_R = 10.80\ \text{KN}$$

$$\frac{\sin\alpha}{B} = \frac{\sin 100}{F_R} \qquad \alpha = 46.84°$$

$\alpha < 50°$ ∴ F_R BELOW HORIZONTAL

$$\not\angle = 50 - \alpha = 3.16° \leftarrow$$

$$F_R = 10.8\ \text{KN} \leftarrow 3.2°$$