



A metal bar is fixed tightly on  $A$  such that it is in static equilibrium. Find the force reaction components at point  $A$ , as well as the magnitude of the moment, given two external forces  $\vec{F}_B$  and  $\vec{F}_C$ , assuming that forces are positive when pointing to the right or upward. Ignore the mass of the member.

$$\Sigma F_x = 0 \rightarrow A_x + F_B \sin(\theta_B - \theta_A) - F_C \sin(\theta_A + \theta_C) = 0 \rightarrow A_x = F_C \sin(\theta_A + \theta_C) - F_B \sin(\theta_B - \theta_A)$$

$$\Sigma F_y = 0 \rightarrow A_y + F_B \cos(\theta_B - \theta_A) + F_C \cos(\theta_A + \theta_C) = 0 \rightarrow A_y = -F_B \cos(\theta_B - \theta_A) - F_C \cos(\theta_A + \theta_C)$$

$$\Sigma M_A = 0 \rightarrow M_A + d_1 \cdot F_B \cos(\theta_B) + (d_1 + d_2) \cdot F_C \cos(\theta_C) = 0 \rightarrow M_A = -d_1 \cdot F_B \cos(\theta_B) - (d_1 + d_2) \cdot F_C \cos(\theta_C)$$

$$\rightarrow |M_A| = d_1 \cdot F_B \cos(\theta_B) + (d_1 + d_2) \cdot F_C \cos(\theta_C)$$

What is the rotation direction of the reaction moment about  $A$ ?

Clockwise