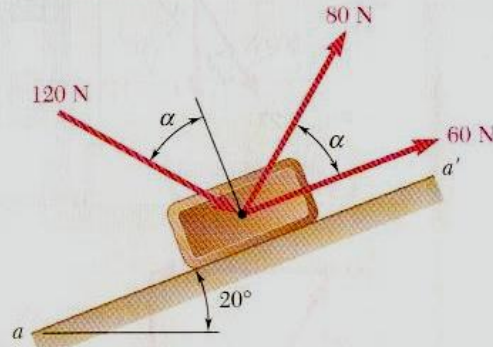


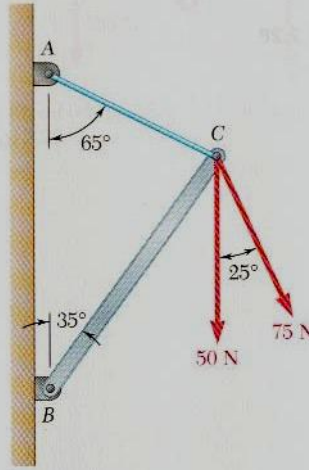
## Engineering Mechanics Assignment #2

1) Knowing  $\alpha = 40^\circ$ , determine the resultant of the three forces shown using rectangular components



2) Determine using rectangular components

- a) the required tension in cable AC, knowing that the resultant of the three forces exerted at point C of the boom BC must be directed along BC,
- b) the corresponding magnitude of the resultant.



3) In Question (1) determine using rectangular components:

- a) the required value of  $\alpha$  if the resultant of the three forces shown is to be parallel to the incline; and, b) the magnitude of the resultant.

### BONUS

A mass,  $m$ , is suspended from a circular ring that is attached to supports by cables AB and AC as shown in the figure. The force in cable AB is  $\mathbf{F}_{AB} = -500\mathbf{i} + 200\mathbf{j} \text{ N}$ .

Knowing that the point A is in equilibrium, determine the mass,  $m$  and the magnitude of the force in cable AC by each of the following methods:

- a) The graphical method (state the scale that you are using),
- b) Trigonometry method (sine and/or cosine rules), and
- c) Rectangular components.

**Note:**  $g = 9.8 \text{ m/sec}^2$

