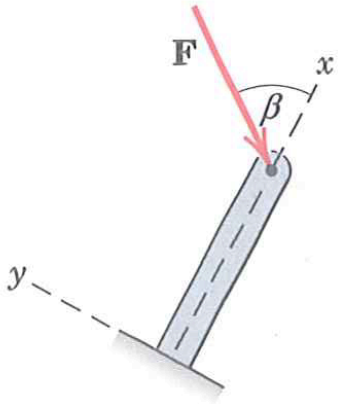
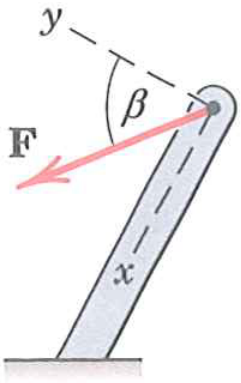
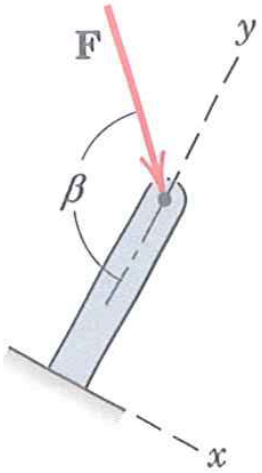
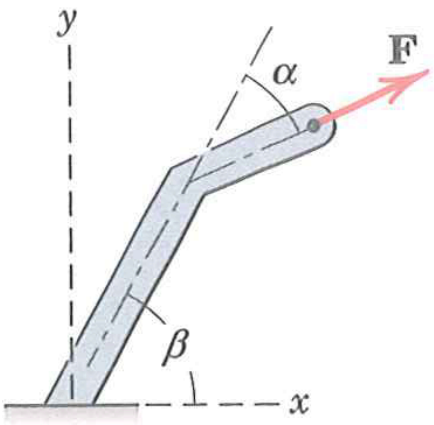
For each situation, write expressions for the scalar components F_x and F_y in terms of F and the given angle(s).



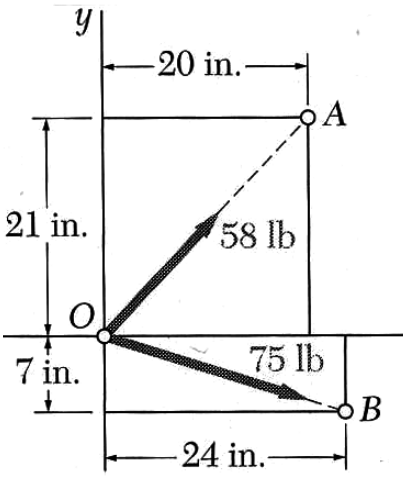






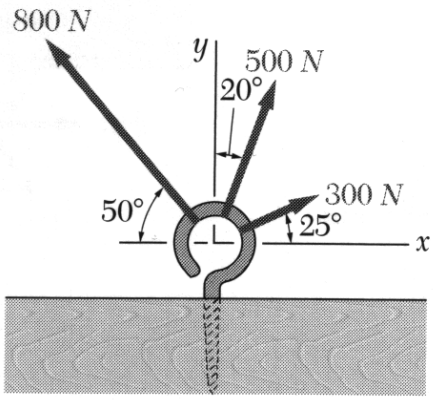
Example 1

(a) Determine the scalar components in the *x*- and *y*- directions of forces **A** and **B**.
(b) Determine the resultant force **R** by adding scalar components.



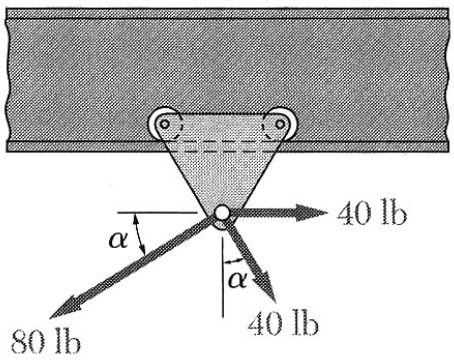
Example 2

a) Sketch the tip-to-tail addition of the three forces shown.
b) Determine the magnitude and direction of the resultant by summing x- and y- components.



Example 3 A hoist trolley is subjected to the three forces shown.

(a) Determine the value of the angle α for which the resultant of the three forces is vertical.
(b) The corresponding magnitude of the resultant.



Hint:
This is a more difficult problem. Start by drawing a tip-to-tail addition that represents the problem. What do you know about the x-component of the resultant? Use this fact to write an equation with α as the unknown. Solving this equation will be challenging. You may need to resort to a trial-and-error approach, or graph the equation and look for solutions that way.