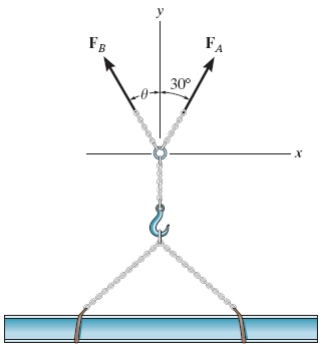
Exercise

•2–29. The beam is to be hoisted using two chains. If the resultant force is to be 600 N directed along the positive y axis, determine the magnitudes of forces $\mathbf{F}_A$ and $\mathbf{F}_B$ acting on each chain and the angle θ of $\mathbf{F}_B$ so that the magnitude of $\mathbf{F}_B$ is a *minimum*. $\mathbf{F}_A$ acts at 30° from the y axis, as shown.

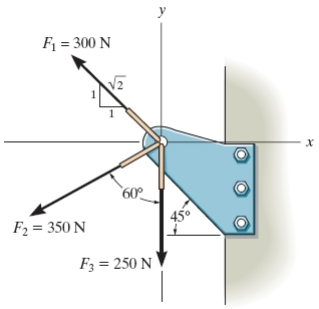


$F_A = 520$ N **Ans**

$F_B = 300$ N **Ans**

Exercise

•2–49. Determine the magnitude of the resultant force and its direction measured counterclockwise from the positive x axis.

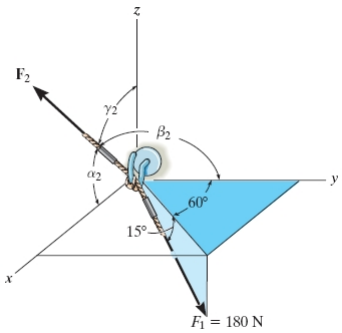


$F_R = 557.5$ **Ans**

$\theta = 202°$ **Ans**

Exercise

*2–76. Determine the magnitude and coordinate direction angles of $\mathbf{F}_2$ so that the resultant of the two forces acts along the positive x axis and has a magnitude of 500 N.



$F_2 = 363$ N Ans

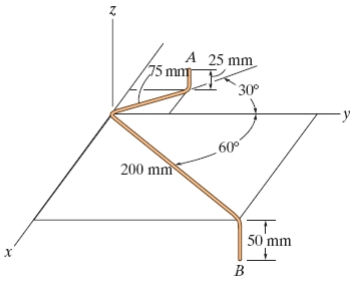
$\alpha_2 = 15.8°$ Ans

$\beta_2 = 104°$ Ans

$\gamma_2 = 82.6°$ Ans

Exercise

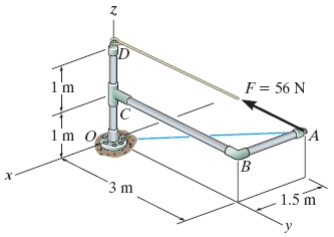
*2–88. Determine the distance between the end points A and B on the wire by first formulating a position vector from A to B and then determining its magnitude.



226.4 mm Ans

Exercise

•2–113. Determine the magnitudes of the components of force $F = 56$ N acting along and perpendicular to line AO.



The magnitude of the projected component of F parallel to line *AO* is = 46.9 N

The component of F perpendicular to line *AO* is = 30.7 N