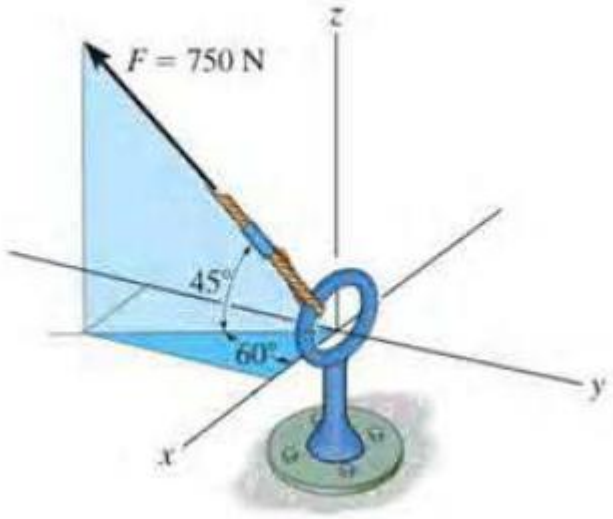
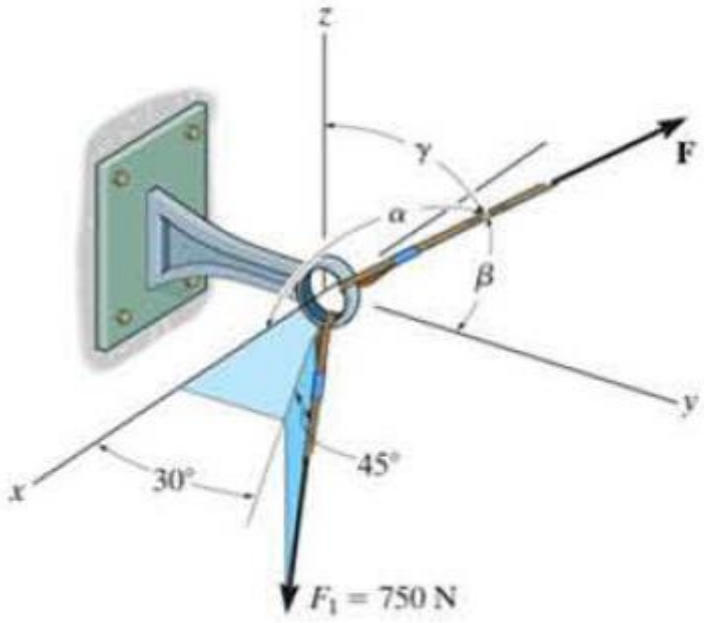
CHAPTER II FORCE VECTORS

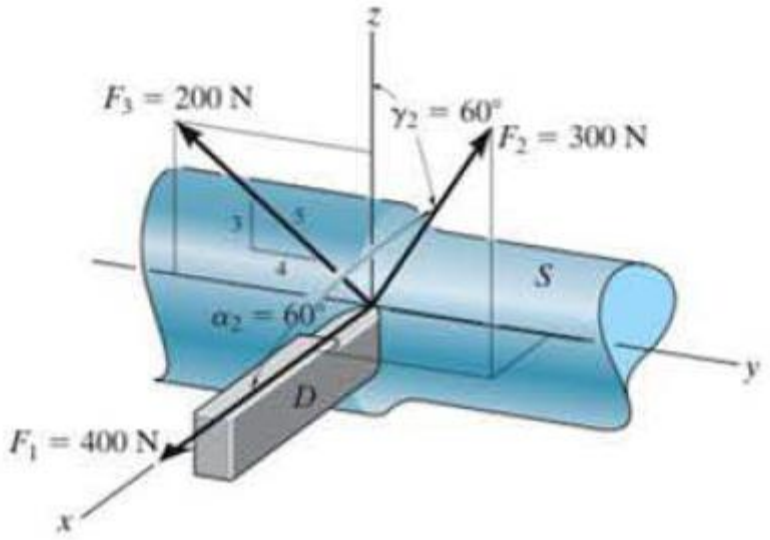
F2–17. Express the force as a Cartesian vector.



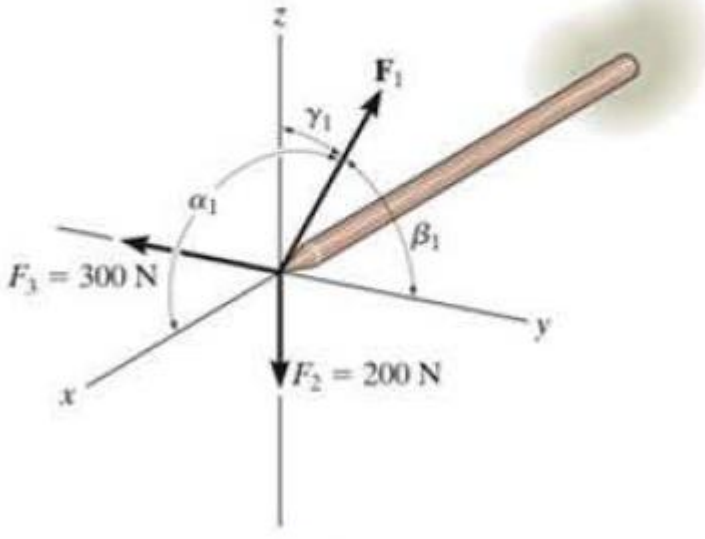
2–70. If the resultant force acting on the bracket is to be $\mathbf{F}_R = \{800\mathbf{j}\}$ N, determine the magnitude and coordinate direction angles of **F**.



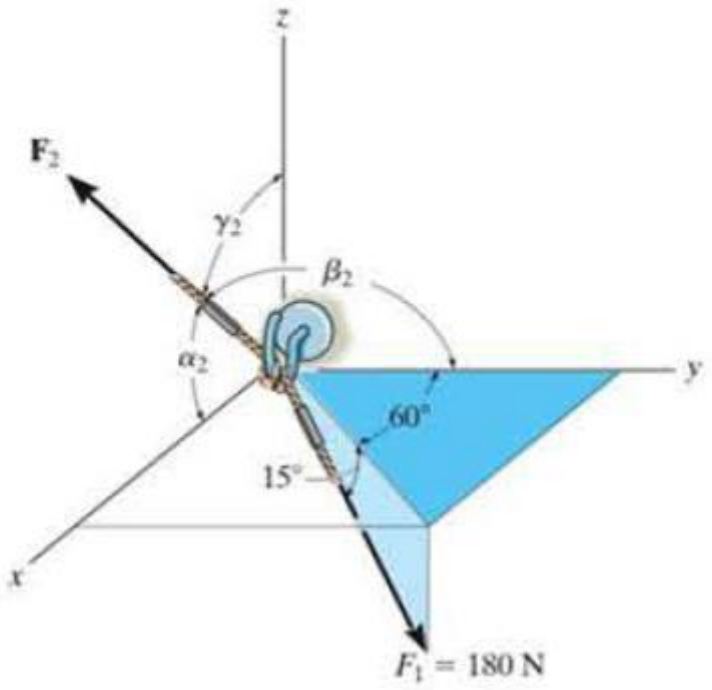
•2–73. The shaft S exerts three force components on the die D. Find the magnitude and coordinate direction angles of the resultant force. Force $\mathbf{F}_2$ acts within the octant shown.



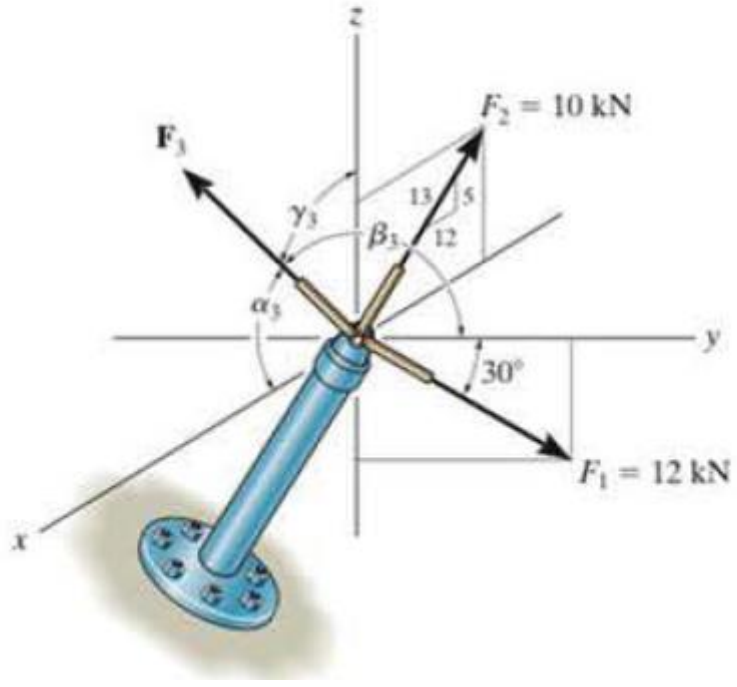
2–75. The mast is subjected to the three forces shown. Determine the coordinate direction angles $\alpha_1, \beta_1, \gamma_1$ of $\mathbf{F}_1$ so that the resultant force acting on the mast is zero.



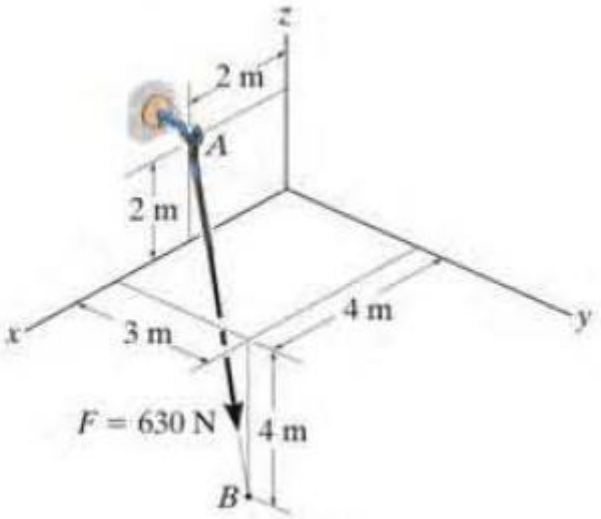
•2–77. Determine the magnitude and coordinate direction angles of $\mathbf{F}_2$ so that the resultant of the two forces is zero.



2–79. Specify the magnitude of $\mathbf{F}_3$ and its coordinate direction angles $\alpha_3, \beta_3, \gamma_3$ so that the resultant force $\mathbf{F}_R = \{9\mathbf{j}\}$ kN.

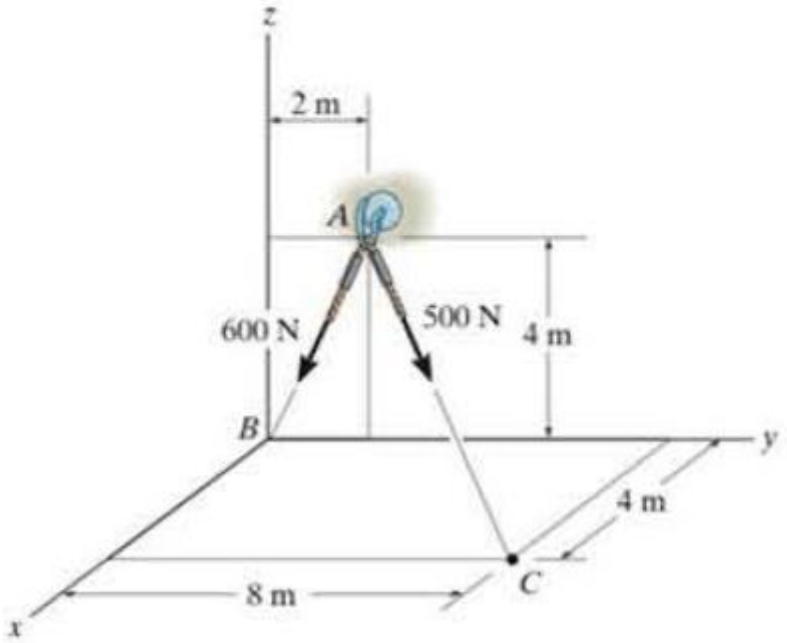


F2–21. Express the force as a Cartesian vector.

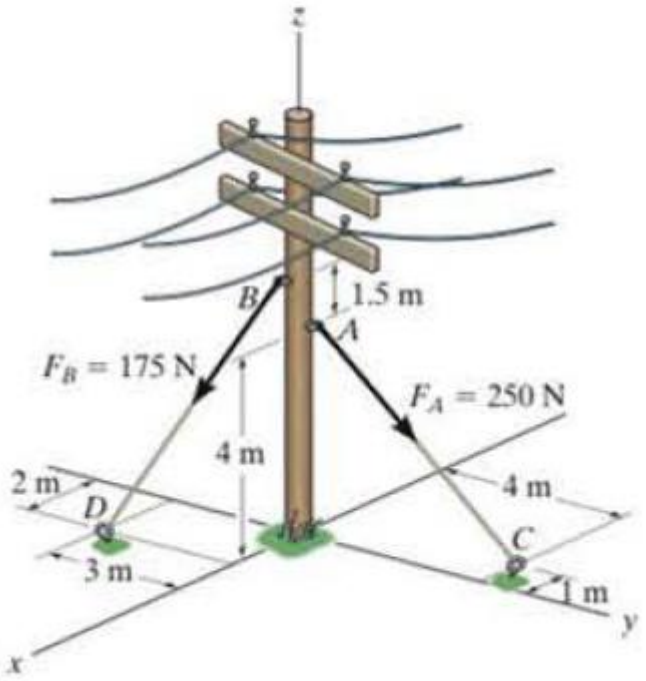


F2–21

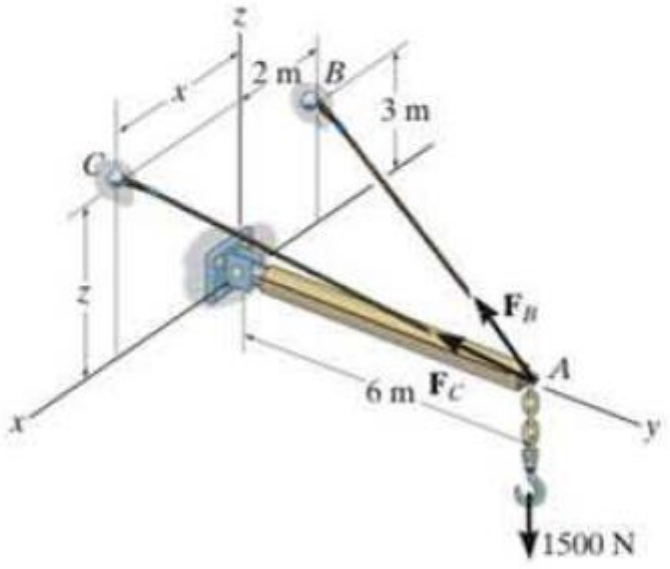
2–90. Determine the magnitude and coordinate direction angles of the resultant force.



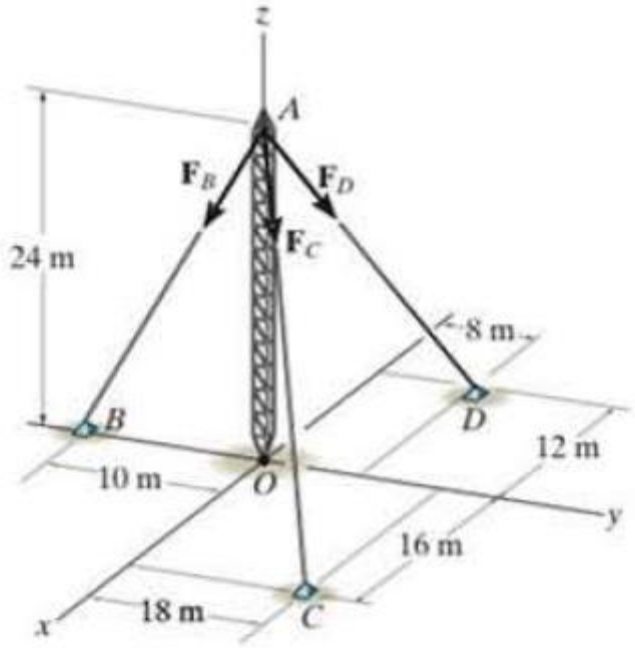
2–98. The guy wires are used to support the telephone pole. Represent the force in each wire in Cartesian vector form. Neglect the diameter of the pole.



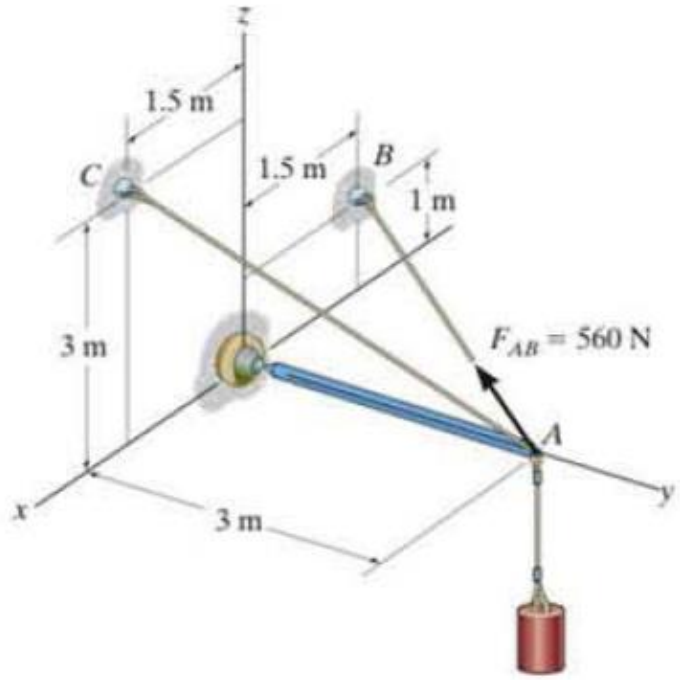
*2–100. Two cables are used to secure the overhang boom in position and support the 1500-N load. If the resultant force is directed along the boom from point A towards O, determine the values of x and z for the coordinates of point C and the magnitude of the resultant force. Set $F_B = 1610$ N and $F_C = 2400$ N.



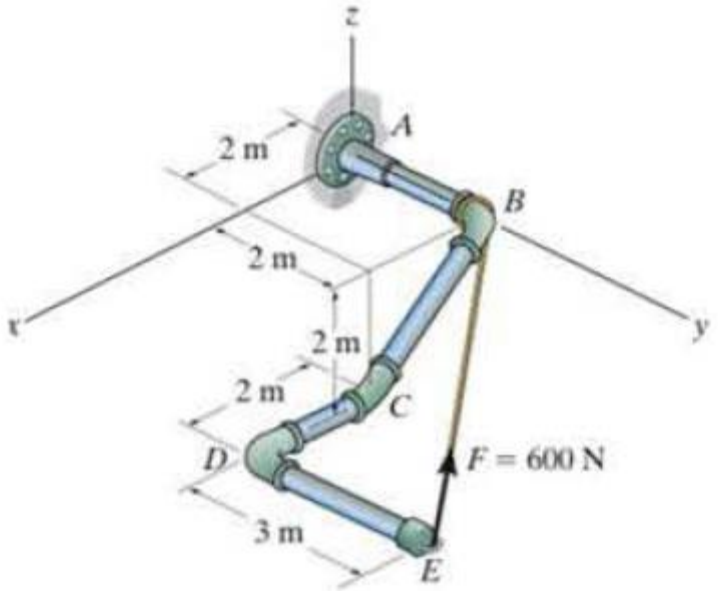
*2–104. The antenna tower is supported by three cables. If the forces of these cables acting on the antenna are $F_B = 520$ N, $F_C = 680$ N, and $F_D = 560$ N, determine the magnitude and coordinate direction angles of the resultant force acting at A.



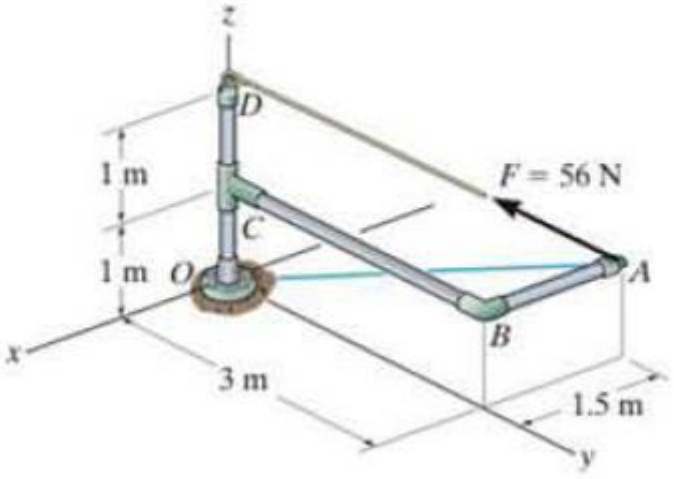
*2–112. Determine the projected component of the force $F_{AB} = 560$ N acting along cable AC. Express the result as a Cartesian vector.



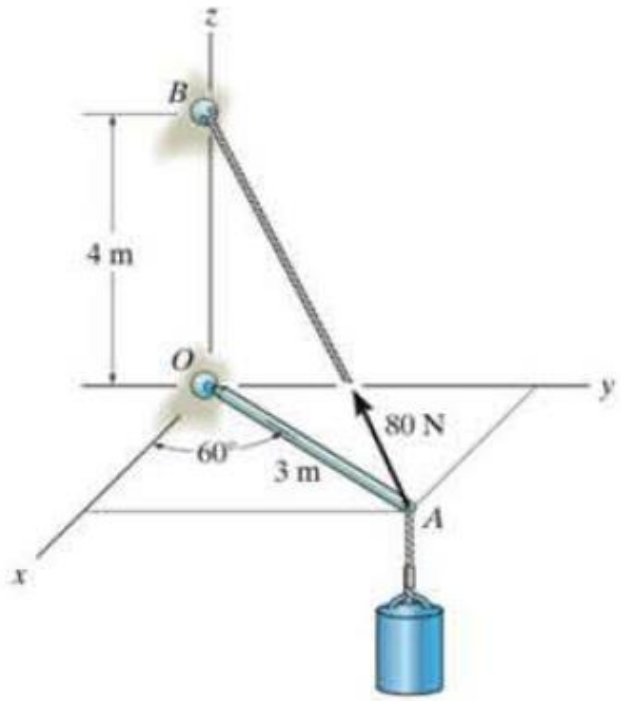
2–115. Determine the magnitudes of the components of $F = 600$ N acting along and perpendicular to segment DE of the pipe assembly.



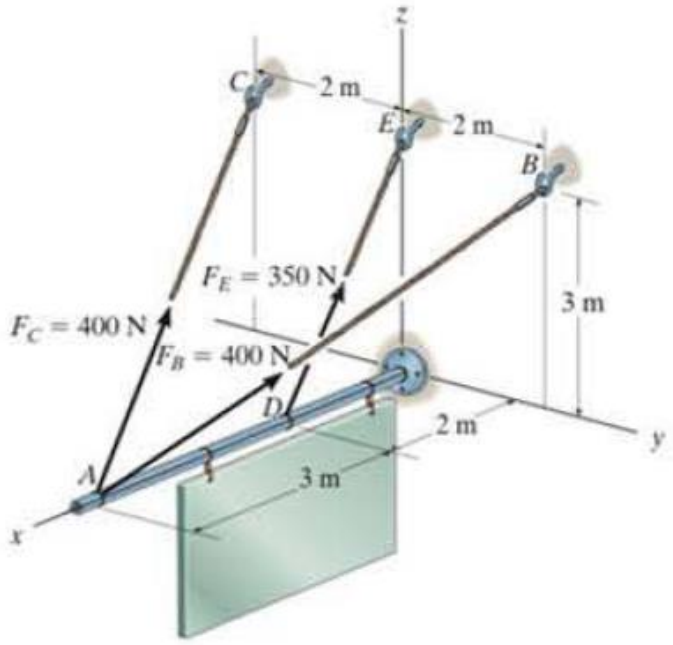
•2–113. Determine the magnitudes of the components of force $F = 56$ N acting along and perpendicular to line AO.



2–142. Cable AB exerts a force of 80 N on the end of the 3-m-long boom OA. Determine the magnitude of the projection of this force along the boom.



2–143. The three supporting cables exert the forces shown on the sign. Represent each force as a Cartesian vector.



2–131. Determine the magnitudes of the projected components of the force $F = 300$ N acting along the x and y axes.