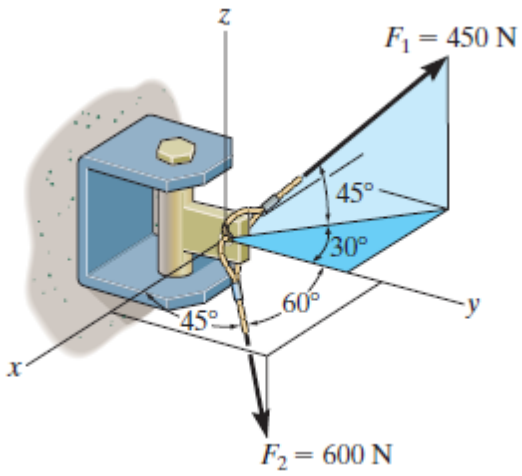
Determine the coordinate angle γ for $\mathbf{F}_2$ and then express each force as a Cartesian vector.



Rectangular Components: Since $\cos^2\alpha_2 + \cos^2\beta_2 + \cos^2\gamma_2 = 1$, then $\cos\gamma_{2z} = \pm\sqrt{1 - \cos^2 45° - \cos^2 60°} = \pm 0.5$. However, it is required that $\gamma_2 > 90°$, thus, $\gamma_2 = \cos^{-1}(-0.5) = 120°$. By resolving $\mathbf{F}_1$ and $\mathbf{F}_2$ into their x, y, and z components, as shown in Figs. *a* and *b*, respectively $\mathbf{F}_1$ and $\mathbf{F}_2$ can be expressed in Cartesian vector form as

$$\mathbf{F}_1 = 450\cos 45°\sin 30°(-\mathbf{i}) + 450\cos 45°\cos 30°(+\mathbf{j}) + 450\sin 45°(+\mathbf{k})$$
$$= \{-159\mathbf{i} + 276\mathbf{j} + 318\mathbf{k}\}\text{N} \quad \textbf{Ans.}$$
$$\mathbf{F}_2 = 600\cos 45°\,\mathbf{i} + 600\cos 60°\,\mathbf{j} + 600\cos 120°\,\mathbf{k}$$
$$= \{424\mathbf{i} + 300\mathbf{j} - 300\mathbf{k}\}\text{ N} \quad \textbf{Ans.}$$