

Ext. 2.79

Determine la magnitud y dirección de la fuerza:

$$F = (690 \text{ lb})i + (300 \text{ lb})j - (580 \text{ lb})k$$

SOLUCION:

$$\|F\| = \sqrt{(690)^2 + (300)^2 + (-580)^2} = 950 \text{ lb}$$

Magnitud = 950 lb.

Cosenos directores:

$$\cos \alpha = \left(\frac{Fx}{F}\right) \Rightarrow \cos \alpha = \left(\frac{690}{950}\right) \Rightarrow \alpha = \cos^{-1}\left(\frac{690}{950}\right)$$

$\alpha = 43.42^\circ$

$$\cos \beta = \left(\frac{Fy}{F}\right) \Rightarrow \cos \beta = \left(\frac{300}{950}\right) \Rightarrow \alpha = \cos^{-1}\left(\frac{300}{950}\right)$$

$\beta = 71.6^\circ$

$$\cos \gamma = \left(\frac{Fz}{F}\right) \Rightarrow \cos \gamma = \left(\frac{-580}{950}\right) \Rightarrow \alpha = \cos^{-1}\left(\frac{-580}{950}\right)$$

$\gamma = 127.63^\circ$