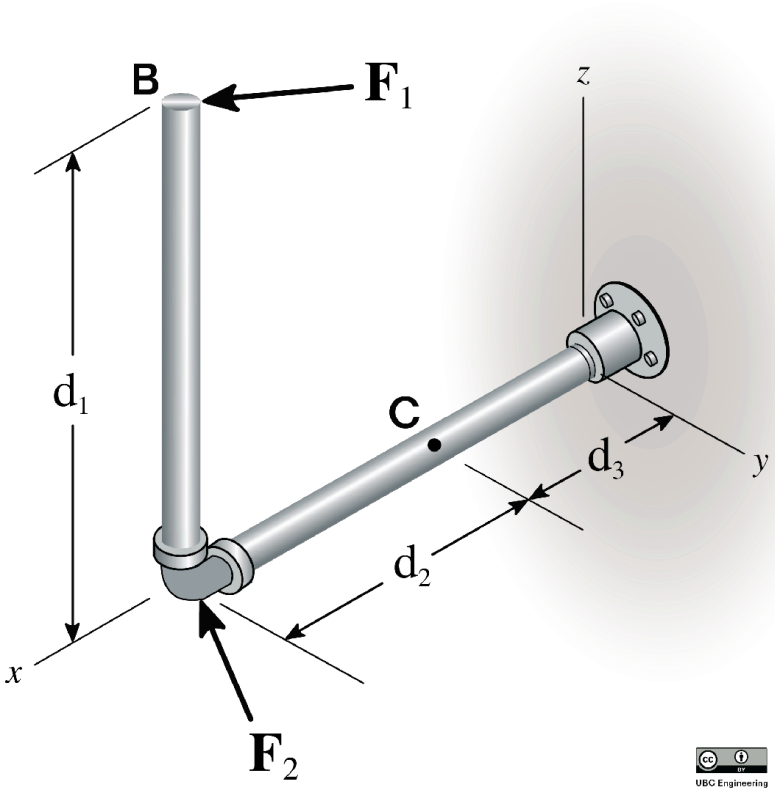

Two forces $\vec{F_1}$ and $\vec{F_2}$ have magnitudes of F_1 and F_2 respectively. If $\vec{F_1}$ has coordinate angles of α_1, β_1, and γ_1, and $\vec{F_2}$ has coordinate angles of α_2, β_2, and γ_2, express both forces as cartesian vectors.

$$\vec{F_1} = F_1(\cos(\alpha_1)\hat{i} + \cos(\beta_1)\hat{j} + \cos(\gamma_1)\hat{k})$$

$$\vec{F_2} = F_2(\cos(\alpha_2)\hat{i} + \cos(\beta_2)\hat{j} + \cos(\gamma_2)\hat{k})$$

Find the magnitude and coordinate direction angles of the resultant force when adding both forces (disregard the rest of the system).

$$F_{Rx} = F_1\cos(\alpha_1) + F_2\cos(\alpha_2)$$

$$F_{Ry} = F_1\cos(\beta_1) + F_2\cos(\beta_2)$$

$$F_{Rz} = F_1\cos(\gamma_1) + F_2\cos(\gamma_2)$$

$$F_R = \sqrt{{F_{Rx}}^2 + {F_{Ry}}^2 + {F_{Rz}}^2}$$

$$\alpha_R = \cos\left(\frac{F_{Rx}}{F_R}\right)$$

$$\beta_R = \cos\left(\frac{F_{Ry}}{F_R}\right)$$

$$\gamma_R = \cos\left(\frac{F_{Rz}}{F_R}\right)$$