

$$\begin{aligned} \vec{F}_1 &= 55 \cos 60^\circ \hat{i} + 55 \cos 30^\circ \hat{j} - 55 \sin 60^\circ \hat{k} \\ &= 27.5 \hat{i} + 47.63 \hat{j} - 27.5 \hat{k} \end{aligned}$$

$$\begin{aligned} \vec{F}_2 &= 0 \hat{i} - \frac{75}{25} * 24 \hat{j} + \frac{75}{25} * 7 \hat{k} \\ &= -72 \hat{j} + 21 \hat{k} \end{aligned}$$

$$\begin{aligned} \vec{F} &= (27.5 + 0) \hat{i} + (47.63 - 72) \hat{j} + (-27.5 + 21) \hat{k} \\ &= 27.5 \hat{i} - 24.37 \hat{j} - 6.5 \hat{k} \end{aligned}$$

$$\begin{aligned} |\vec{F}| &= \sqrt{(27.5)^2 + (-24.37)^2 + (-6.5)^2} \\ &= \underline{37.31} \end{aligned}$$

$$\vec{F} = \frac{27.5}{37.31} \hat{i} - \frac{24.37}{37.31} \hat{j} - \frac{6.5}{37.31} \hat{k}$$

$$= \frac{27.5}{37.31} = 74^\circ = \underline{42.85}$$

$$= -\frac{24.37}{37.31} \Rightarrow \beta = \underline{130.78}$$

$$= -\frac{6.5}{37.31} \Rightarrow \gamma = \underline{100^\circ}$$

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