

[2.4절]

2.75 $P = 300 \text{ N}$, $\alpha = 20^\circ$, $\beta = 40^\circ$

S; known P , α , β ,

unknown F_x , F_y , F_z , θ_x , θ_y , θ_z

⇒ 공간에서 힘의 직각성분 (각도 이용),
방향여현

A;

(a) $P_y = P \cos\alpha = (300 \text{ N}) \cos 20^\circ = 281.9 \text{ N}$

$P_h = P \sin\alpha = (300 \text{ N}) \sin 20^\circ = 102.61 \text{ N}$

$P_x = -P_h \cos\beta$

$= -(102.61 \text{ N}) \cos 40^\circ = -78.60 \text{ N}$

$P_z = -P_h \sin\beta$

$= -(102.61 \text{ N}) \sin 40^\circ = -65.96 \text{ N}$

⇒ $P_x = -78.6 \text{ N}$, $P_y = 282 \text{ N}$, $P_z = -66.0 \text{ N}$

(b) $\cos\theta_x = \frac{P_x}{P} = \frac{-78.60 \text{ N}}{300 \text{ N}} = -0.2620 \Rightarrow$

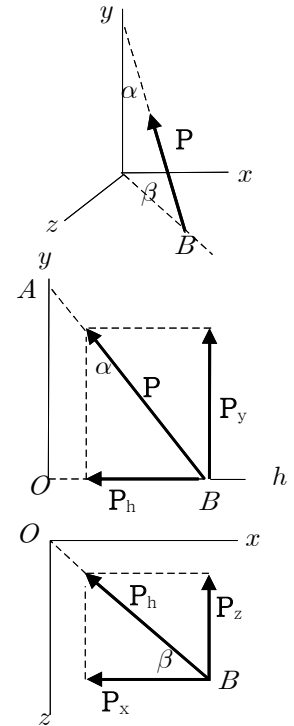
$\theta_x = \cos^{-1}(-0.2620) = 105.2^\circ$

$\theta_y = \alpha = 20.0^\circ$

$\cos\theta_z = \frac{P_z}{P} = \frac{-65.96 \text{ N}}{300 \text{ N}} = -0.2199 \Rightarrow$

$\theta_z = \cos^{-1}(-0.2199) = 102.7^\circ$

M;



R; 과정의 타당성 (가령, 수직성분, 수평성분)

T; 결과 검토 (가령, 힘 성분의 부호와 방향 각도의 범위)