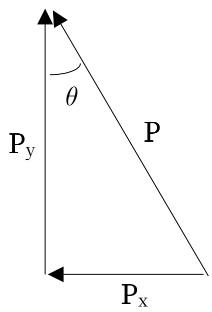
[2.7~2.8절]

2.29 $\theta = 20°$ $P_y = 45$ N



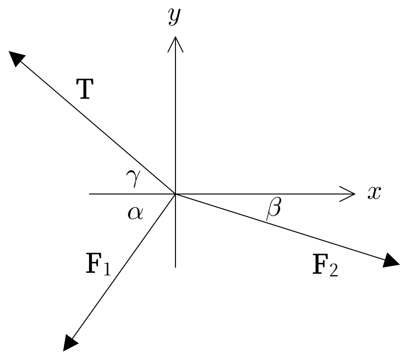
(a) $P_y = P\cos\theta$

$\Rightarrow \quad P = \dfrac{P_y}{\cos\theta} = \dfrac{45\text{ N}}{\cos 20°} = 47.9$ N

(b) $\tan\theta = \dfrac{P_x}{P_y}$

$\Rightarrow \quad P_x = P_y \tan\theta = (45\text{ N})\tan 20° = 16.38$ N

2.35 $F_1 = 100$ N, $\cos\alpha = \dfrac{3}{5}$, $\sin\alpha = \dfrac{4}{5}$



$F_2 = 156$ N, $\cos\beta = \dfrac{12}{13}$, $\sin\beta = \dfrac{5}{13}$

$T = 145$ N, $\cos\gamma = \dfrac{84}{116}$, $\sin\gamma = \dfrac{80}{116}$

$R_x = -F_1\cos\alpha + F_2\cos\beta - T\cos\gamma$

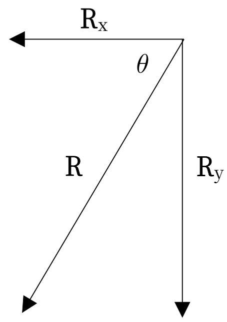
$= -(100\text{ N})\dfrac{3}{5} + (156\text{ N})\dfrac{12}{13} - (145\text{ N})\dfrac{84}{116}$

$= -21$ N

$R_y = -F_1\sin\alpha - F_2\sin\beta + T\sin\gamma$

$= -(100\text{ N})\dfrac{4}{5} - (156\text{ N})\dfrac{5}{13} + (145\text{ N})\dfrac{80}{116}$

$= -40$ N



$R = \sqrt{R_x^2 + R_y^2} = \sqrt{(-21\text{ N})^2 + (-40\text{ N})^2} = 45.2$ N

$\theta = \tan^{-1}\dfrac{R_y}{R_x} = \tan^{-1}\dfrac{40\text{ N}}{21\text{ N}} = 62.3°$

$\Rightarrow$ R = 45.2 N ↙62.3°