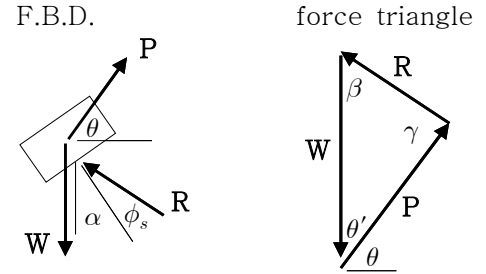


8.10 $W = 600 \text{ N}, \alpha = 35^\circ, \mu_s = 0.25, \mu_k = 0.20, \theta = 60^\circ$

S; known $W, \alpha, \mu_s, \mu_k,$ unknown $P, \theta \Rightarrow$ 마찰각 $\phi_s, \phi_k,$ 힘 삼각형, 삼각법

A; 마찰각 $\phi_s = \tan^{-1}(0.25) = 14.04^\circ$
 $\phi_k = \tan^{-1}(0.20) = 11.31^\circ$
 smallest $P \Rightarrow \gamma = 90^\circ$

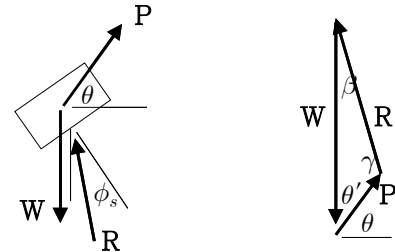
M;



(a) 미끄러져 올라가려 할 때
 $\beta = \alpha + \phi_s = 35^\circ + 14.04^\circ = 49.04^\circ$
 $\theta' = 180^\circ - \gamma - \beta$
 $= 180^\circ - 90^\circ - 49.04^\circ = 40.96^\circ$
 $\theta = 90^\circ - \theta' = \beta = 49.04^\circ$

$P = W \sin \beta = (600 \text{ N}) \sin 49.04^\circ = 453 \text{ N} \Rightarrow P = 453 \text{ N} \angle 49.0^\circ$

(b) 미끄러져 내려가려 할 때
 $\beta = \alpha - \phi_s = 35^\circ - 14.04^\circ = 20.96^\circ$
 $\theta' = 180^\circ - \gamma - \beta$
 $= 180^\circ - 90^\circ - 20.96^\circ = 69.04^\circ$
 $\theta = 90^\circ - \theta' = \beta = 20.96^\circ$



$P = W \sin \beta = (600 \text{ N}) \sin 20.96^\circ = 215 \text{ N} \Rightarrow P = 215 \text{ N} \angle 21.0^\circ$

R;(과정의 타당성) (가령, 올라가려 할 때와 내려가려 할 때 마찰각 방향)

T;(결과의 의미) (가령, 올라가려 할 때 P가 내려가려 할 때 P 보다 큼)