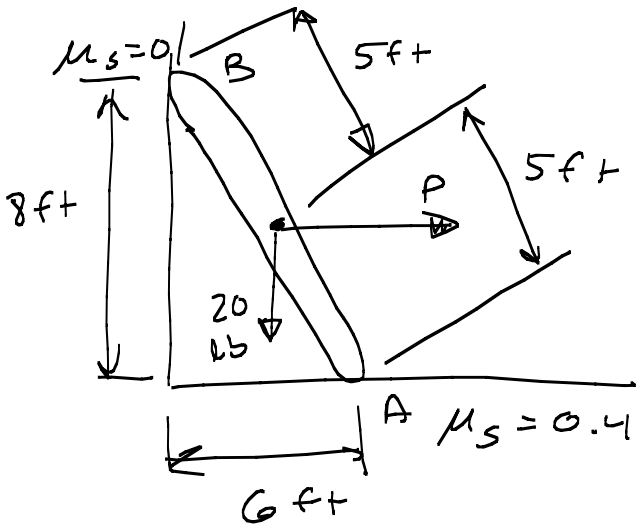
Problem 1

Determine: P for impending motion



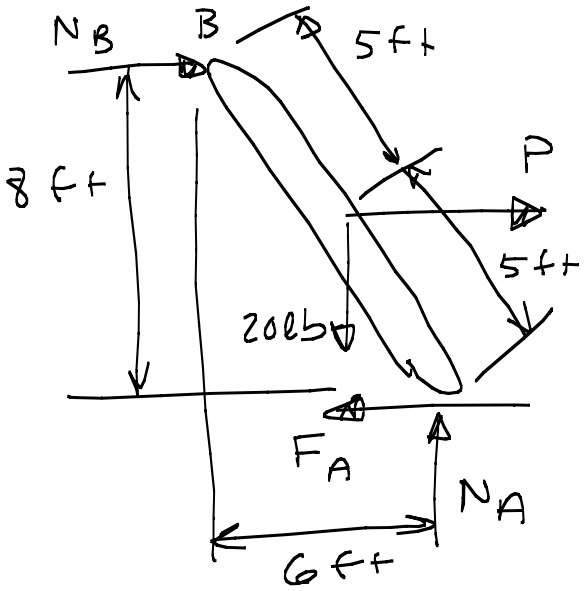
Unknowns

N_B, N_A, F_A, P (4)

Equilibrium (3)

Friction $F_A = \mu_{s_A} N_A$ (1)

Impending motion at all points



Assume slipping

$+\uparrow \Sigma F_y = 0 \Rightarrow N_A - 20\,lb = 0$ $\boxed{N_A = 20\,lb}$

$F_A = \mu_{s_A} N_A = (0.4)(20lb) = \boxed{8\,lb}$

$+\circlearrowleft \Sigma M_B = 0 \Rightarrow +(P)(4ft) - (20lb)(3ft) + (N_A)(6ft) - (F_A)(8ft) = 0$

$\boxed{P = 1\,lb}$

$\pm \Sigma F_x = 0 \Rightarrow N_B + P - F_A = 0$

$N_B + 1lb - 8lb = 0$

$\boxed{N_B = 7lb > 0}$ Slipping Occurs

$\boxed{P = 1\,lb}$