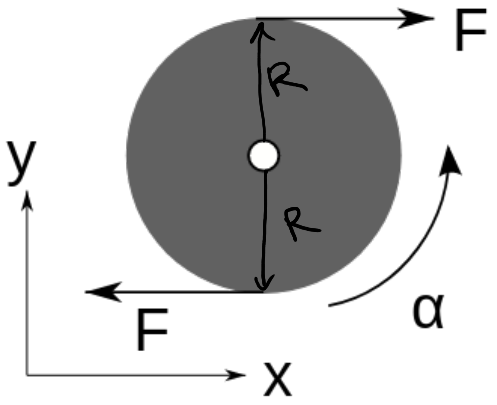
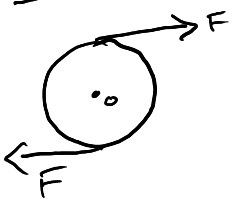


$r \cdot F = \tau = I\alpha$

I = moment of inertia

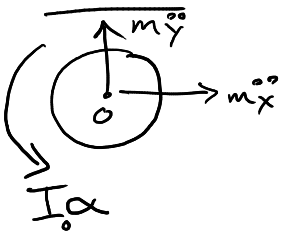
$\left[\frac{mR^2}{2}\right]$

FBD



=

KD

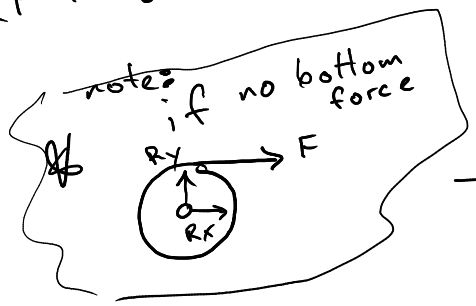


$\circlearrowleft \sum M_o = -rF - rF = I_o\alpha$

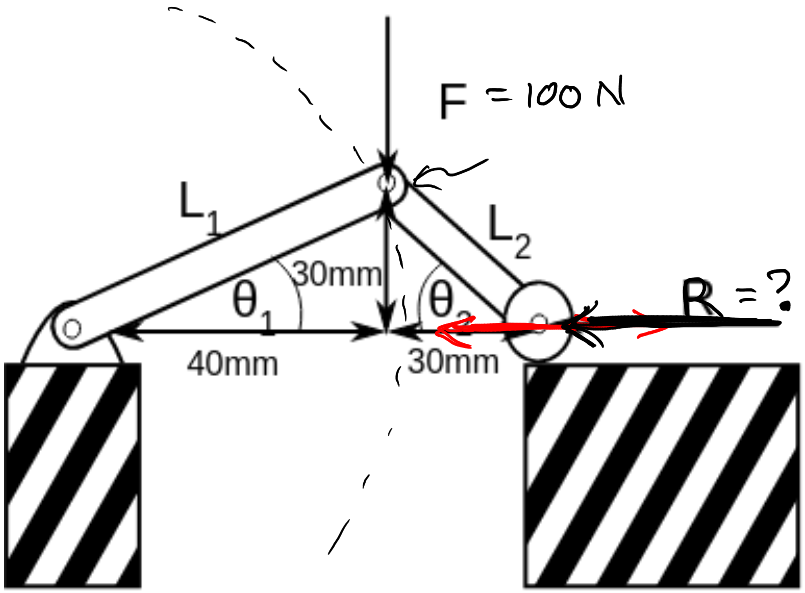
$F = -\frac{I_o\alpha}{2r}$

what if?

note: if no bottom force



$\rightarrow \quad -rF = I_o\alpha$



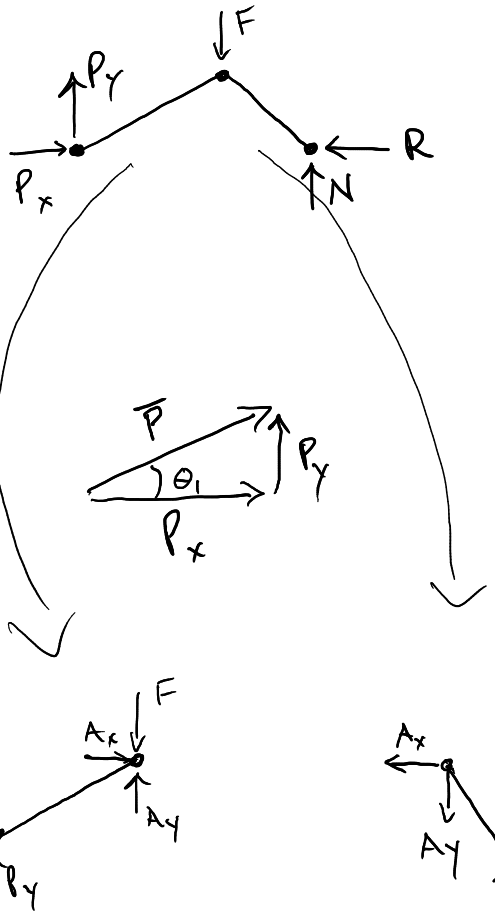
quasistatic

$\Sigma F_x = 0$

$\Sigma F_y = 0$

$\Sigma M = 0$

FBD



$\Sigma F_x = R_x - R = 0$

$\Sigma F_y = R_y + N - F = 0$

$R_x = R$

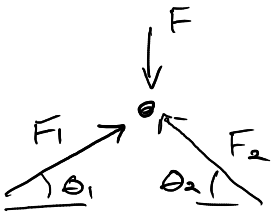
$R_y + N = F$

$\Sigma F_x = P_x - R = 0$

$\Sigma F_y = P_y + N - F = 0$

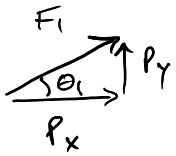
$\Sigma F_x = -R - A_x = 0 \Rightarrow A_x = -R$

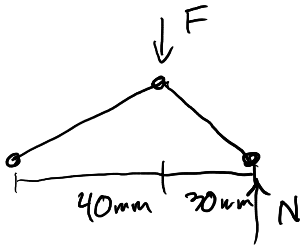
$\Sigma F_y = N - A_y = 0 \quad N = A_y$



$R = P_x$

$P_y + N = F$





$\Sigma M = 70 \cdot N - 40 \cdot F$

$N = \frac{4}{7} \cdot F$