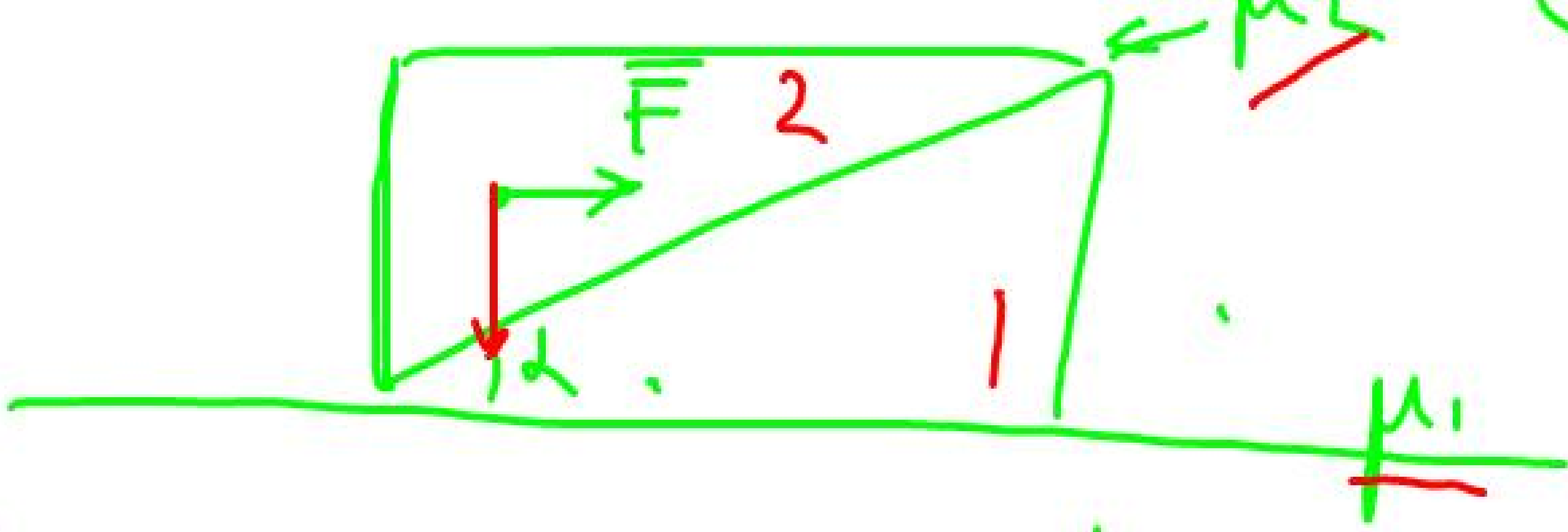


Дано: m, m

$\mu_1 = 0$

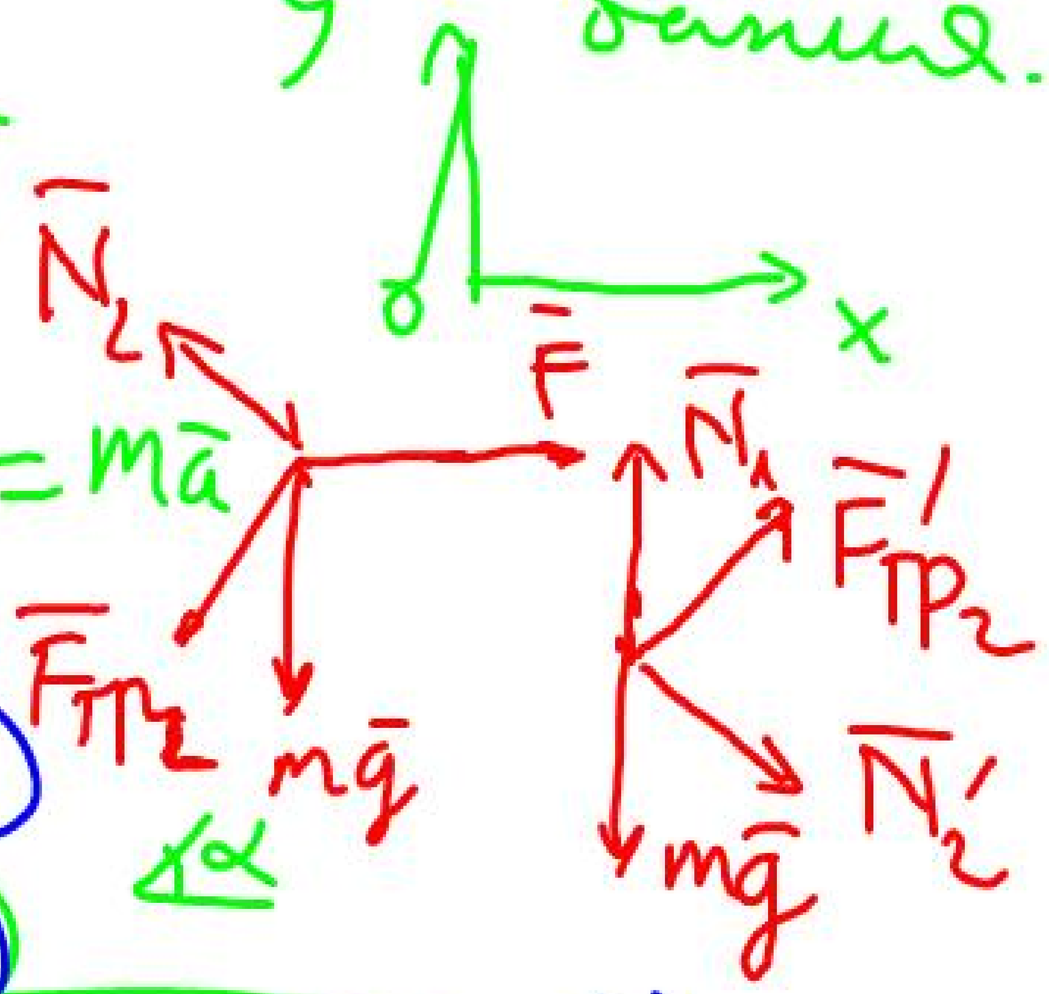
μ_2

Найти: F - ?

Между клином 1 и 2 нет проскальзывания.

1: $\bar F + \bar N_2 + \bar F_{TP_2} + m\bar g = m\bar a$

2: $\bar N_2' + \bar N_1' + \bar F_{TP_2}' + m\bar g = m\bar a$



Ox: $F - N_2 \sin\alpha - F_{TP}\cos\alpha = ma$

$F_{TP_2} \cdot \cos\alpha + N_2 \sin\alpha = ma$

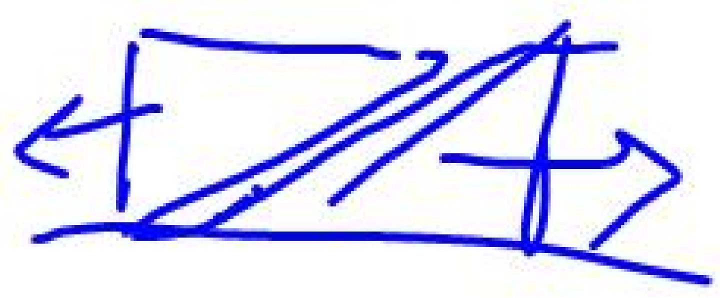
$\Rightarrow F = 2N_2 \sin\alpha + 2F_{TP}\cos\alpha$

$F - mg\sin\alpha\cos\alpha - mg\cos^2\alpha \cdot \mu_2$

$= mg\cos^2\alpha + mg\cos\alpha\sin\alpha.$

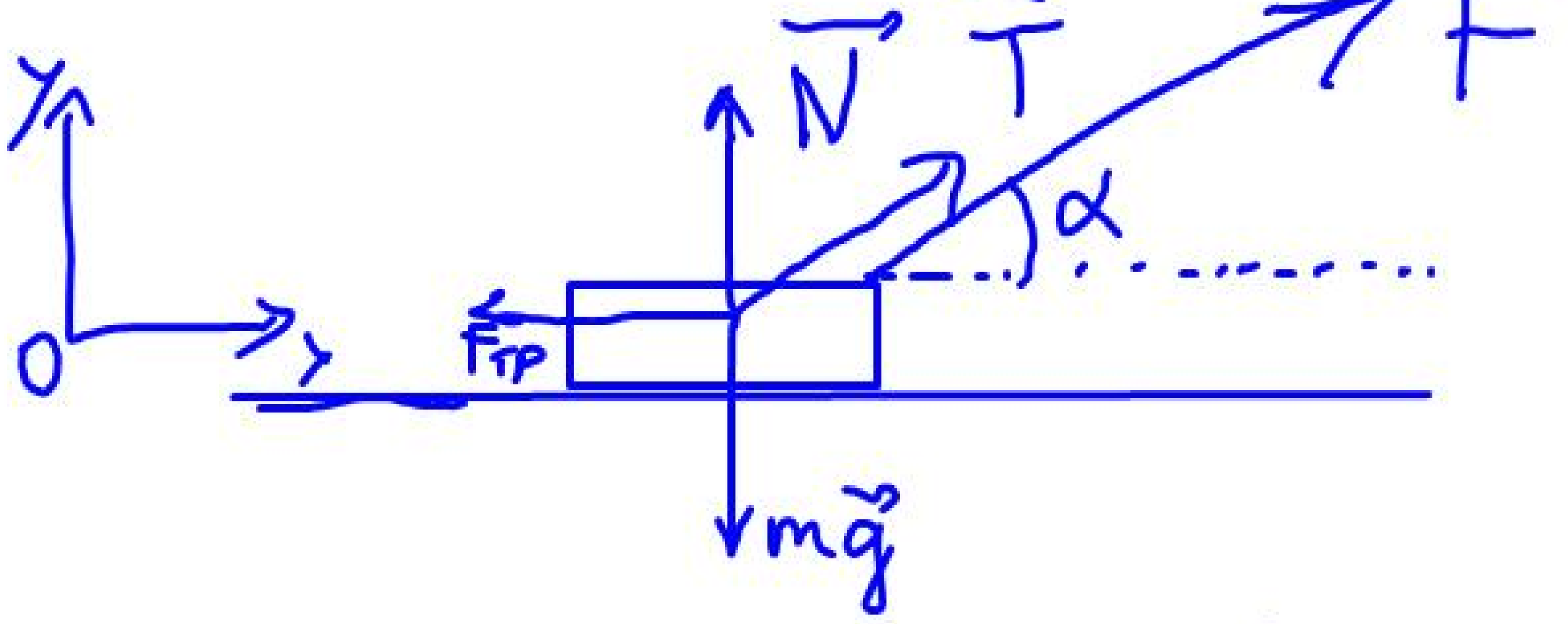
$F \leq 2mg\cos^2\alpha + mg\sin\alpha\cos\alpha(1+\mu_2)$

$= mg\cos\alpha(2\cos\alpha + \sin\alpha + \sin\alpha\mu_2)$



F_T

$F \leq \mu_2(2\cos\alpha + 2\sin^2\alpha)\dfrac{mg}{1-\mu_2\sin\alpha} + 2\sin\alpha mg$



$v = const$

$m,$

k

$\alpha_{min} - ?$

F_{min}

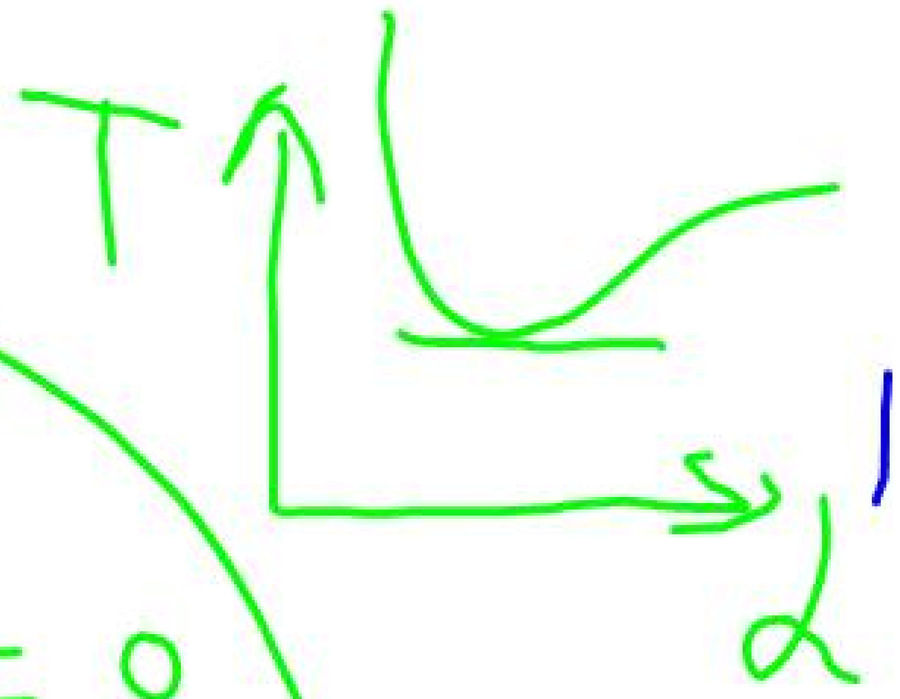
$$\vec F_{тр} + \vec N + m\vec g + \vec T = \vec 0$$

$Oy:\ N + T\cdot\sin\alpha - mg = 0$

$Ox:\ T\cdot\cos\alpha - F_{тр} = 0 \qquad F_{тр} = \mu\cdot N = \mu\cdot(mg - T\cdot\sin\alpha)$

$$T\cdot\cos\alpha - \mu(mg - T\cdot\sin\alpha) = 0$$

$$T = \frac{\mu mg}{\cos\alpha + \mu\sin\alpha}$$



$$T'_\alpha = \frac{-\mu mg\cdot(\mu\cdot\cos\alpha - \sin\alpha)}{(\cos\alpha + \mu\cdot\sin\alpha)^2} = 0$$

$$\Rightarrow \mu \quad \alpha - \sin\alpha = 0 \Leftrightarrow \mu = tg\,\alpha_{min}$$

$$\Leftrightarrow \alpha = arctg\,\mu$$

$$T = \frac{tg\alpha\, mg / tg\alpha}{(\cos\alpha + tg\alpha\cdot\sin\alpha)/tg\alpha} = \qquad \alpha = 0$$

$$= \frac{mg}{\frac{\cos^2\alpha}{\sin\alpha} + \sin\alpha} \quad \Big|\ \sin\alpha =$$

$$\sin^2\alpha + \cos^2\alpha = 1 \ /\sin^2\alpha$$

$$1 + ctg^2\alpha = \frac{1}{\sin^2\alpha}$$