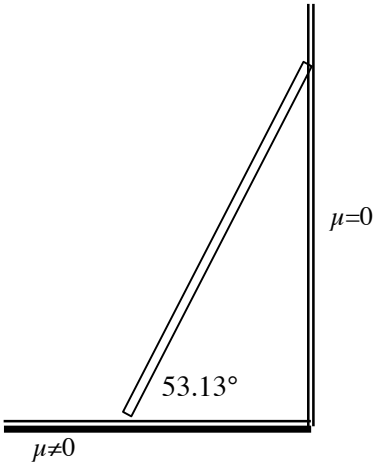
W4.06

STATIC EQUILIBRIUM – Ladders

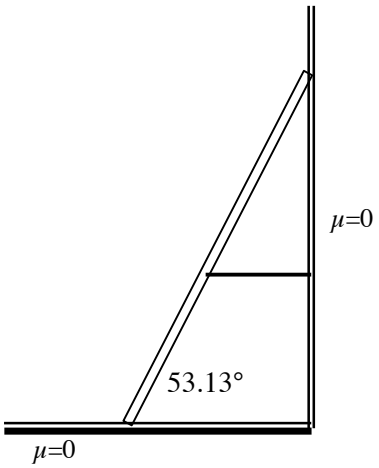
$\Sigma F = 0$ & $\Sigma \tau = 0$

Note: all walls are frictionless (μ=0) and all floors are rough ($\mu \neq 0$), unless otherwise indicated.

[3] A 10 meter long ladder leans against the wall as shown. If the ladder weighs 400 N and μ_{Floor}=0.4, how far up the ladder could a 600 N person climb before the ladder starts to slip?



[4] A 10 meter long ladder leans against the wall as shown. If the ladder weighs 200 N and the floor is frictionless, what is the tension in the rope (attached to the middle of the ladder) when a 600 N person stands at the top?



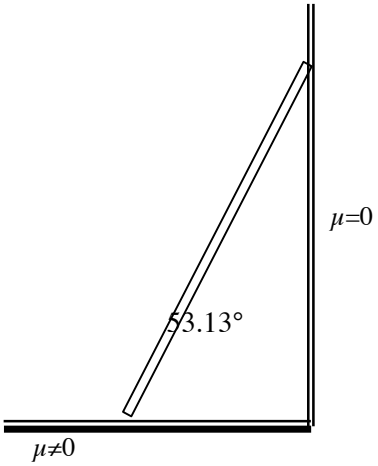
W4.06

STATIC EQUILIBRIUM – Ladders KEY

$\Sigma F = 0$ & $\Sigma \tau = 0$

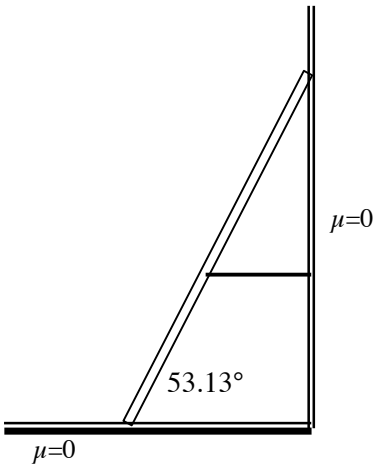
Note: all walls are frictionless (μ=0) and all floors are rough ($\mu \neq 0$), unless otherwise indicated.

[3] A 10 meter long ladder leans against the wall as shown. If the ladder weighs 400 N and μ_{Floor}=0.4, how far up the ladder could a 600 N person climb before the ladder starts to slip?



5.55 meters up the ladder.

[4] A 10 meter long ladder leans against the wall as shown. If the ladder weighs 200 N and the floor is frictionless, what is the tension in the rope (attached to the middle of the ladder) when a 600 N person stands at the top?



T = 1,050 N