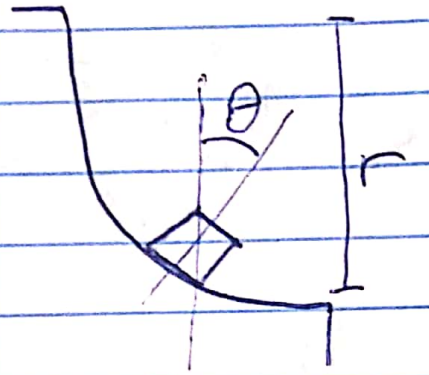
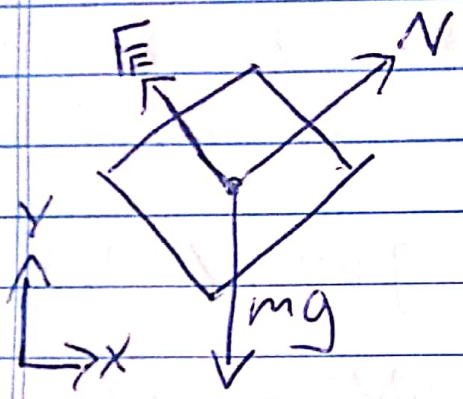
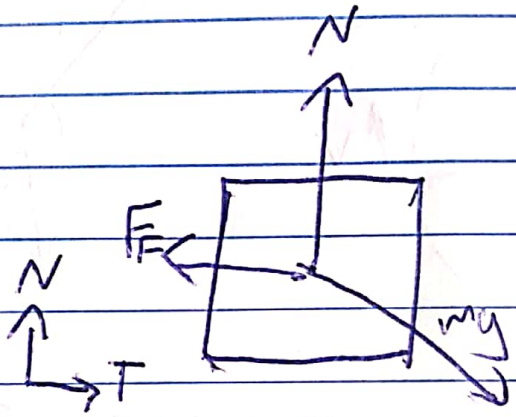
Date



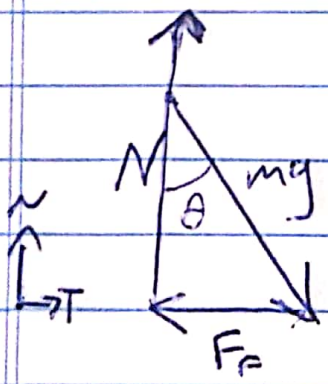
given: mass, maximum velocity, angle θ where max $\vec{v}$ occurs, radius

find μ





When maximum velocity is reached, tangential acceleration is zero, and normal acceleration is v^2/r



$$\uparrow F_{NET} = mv^2/r$$

$$F_F = \sin\theta \cdot mg$$

$$N = \cos\theta \cdot mg + mv^2/r$$

$$F_F = \mu N \qquad \mu = F_F/N$$

$$\mu = \frac{\sin\theta \cdot g}{\cos\theta \cdot g + v^2/r}$$