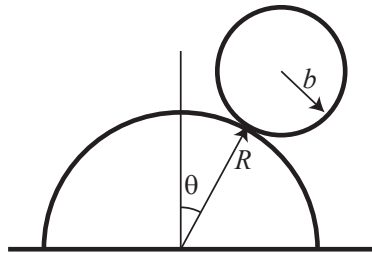


3. A uniform cylinder of mass m and radius b rolls off a fixed cylindrical surface of radius R under the influence of gravity. The axes of both cylinders are horizontal. The rolling cylinder starts from the top of the fixed cylinder with a negligibly small velocity.



- (a) If we assume the cylinder rolls without slipping, find the angle θ from the vertical when it loses contact with the fixed cylinder.
- (b) In practice for a finite value of μ the cylinder will start to slip before it loses contact. Find the angle when it starts to slip for $\mu = 1$.