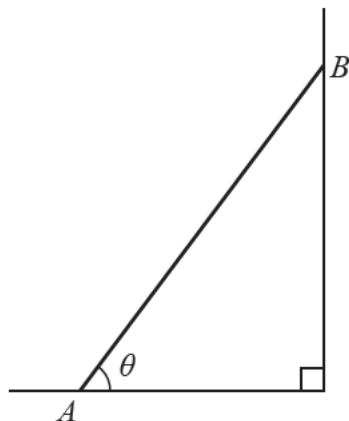**2.**

Figure 1

The ladder AB shown in Figure 1 has length $2a$ and weight W.

The ladder rests in equilibrium with end A on rough horizontal ground and end B against a smooth vertical wall.

The ladder rests in a vertical plane perpendicular to the wall, and is inclined at angle θ to the ground.

The coefficient of friction between the ladder and the ground is μ.

The ladder is on the point of slipping.

The ladder is modelled as a uniform rod.

(a) Show that $\mu = \dfrac{1}{2\tan\theta}$

(7)

(b) If the ladder were not modelled as uniform, state how this would affect the calculated value of μ, explaining your answer carefully.

(2)