



A ladder is leaning against a smooth wall. There is a friction between the ladder and the floor, which may hold the ladder in place.

The ladder is stable only

$$\text{when } \mu \geq \frac{1}{2 \tan \theta}.$$

Given:  $\mu = 0.4$ , &  $\theta = 45^\circ$ .

The ladder will be

- A) stable.
- B) at the critical point.
- C) unstable.

Evaluate the right-hand-side of the above inequality:  $\frac{1}{2 \tan 45^\circ} = 0.5$ .

Since  $\mu = 0.4 < 0.5$ , this inequality is violated.

Thus the ladder is unstable.

Answer **C**.