



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

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**.