

7D Ladders

1. A uniform rod AB of mass 40kg and length 10m rests with the end A on rough horizontal ground. The rod rests against a smooth peg C where $AC = 8\text{m}$. The rod is in limiting equilibrium at an angle of 15° to the horizontal. Find:
 - a) The magnitude of the reaction at C

b) The coefficient of friction between the rod and the ground

2. A ladder, AB, of mass m and length $3a$, has one end A resting on rough horizontal ground. The other end, B, rests against a smooth vertical wall. A load of mass $2m$ is fixed on the ladder at point C, where $AC = a$. The ladder is modelled as a uniform rod and the load is modelled as a particle. The ladder rests in limiting equilibrium at an angle of 60° with the ground.
- Find the coefficient of friction between the ladder and the ground.