4E Tipping Point

1. A uniform rod of length 4m and mass 12kg is resting in a horizontal position on supports at C and D, with AC = DB = 0.5m

   When a particle of mass mkg is placed on the rod at point B, the rod is on the point of turning about D.

   Find the value of m.

2. A non-uniform rod AB, of length 10m and weight 40N, is suspended from a pair of light cables attached to C and D where $AC = 3m$ and $BD = 2m$.

When a weight of 25N is hung from point A the rod is on the point of rotation.

Find the distance of the centre of mass of the rod from point A.