1. Draw the shear and moment diagrams for the beam, and derive the shear and moment formulas for the portion of the beam under the distributed load. Be sure to label all min. and max. points on the diagrams.
2. Draw the shear and moment diagrams for the beam. Be sure to label all min. and max. points on the diagrams.
3. Block \( A \) has a mass of 50 kg and rests on a surface for which \( \mu_s = 0.25 \). If the coefficient of static friction between the cord and the fixed peg at \( C \) is \( \mu_s' = 0.3 \), determine the largest weight of suspended cylinder \( D \) that will not cause motion, which could include tipping or slipping.
4. Using integration, determine both the area and the centroidal distance \( x-bar \) of the shaded area. Then, using the second theorem of Pappus-Guldinus, determine the volume of the solid generated by revolving the area about the \( y \)-axis.