Department of Mechanical Engineering (NITC)

S1ME **ZZ1001D ENGINEERING MECHANICS** **Tutorial Test 3-Set 3**

Time: One Hour Maximum Marks: 20

1. At what height *h* (Fig. 1) will the water cause the door to rotate clockwise? The door is 3 m wide. Neglect friction and the weight of the door.
2. The beam is subjected to the two forces shown. Express each force in Cartesian vector form and determines the magnitude and coordinate direction angles of the resultant force.

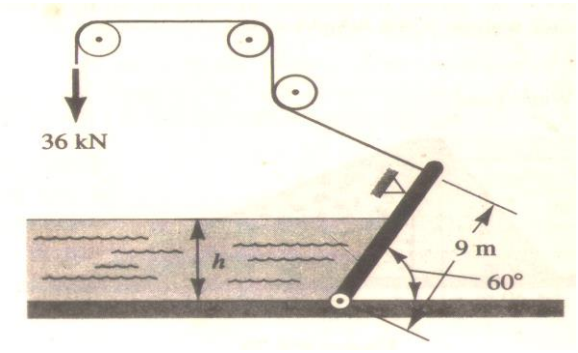

Figure 1

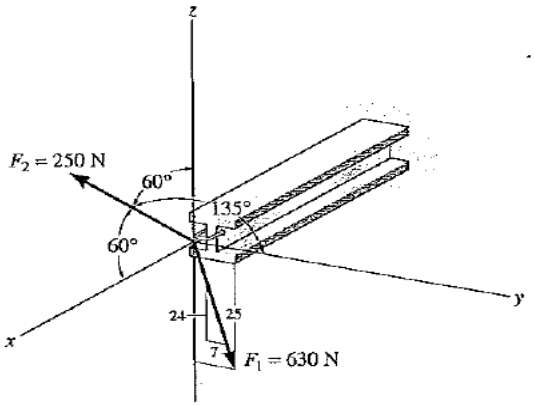

Figure 2

----------P.T.O----------

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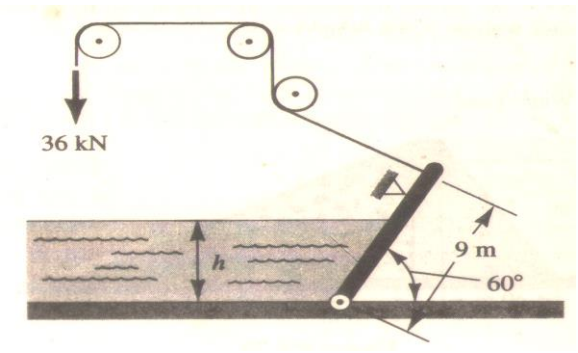

Figure 1

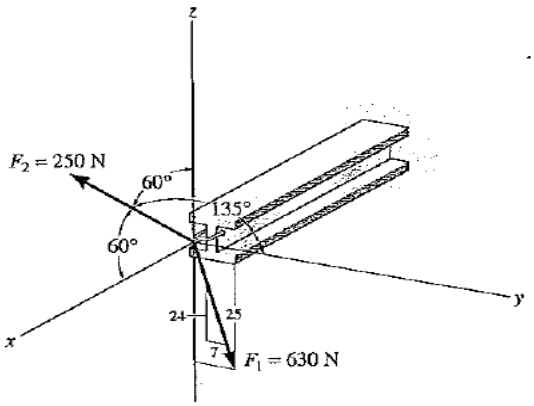

Figure 2

----------P.T.O----------

3. Locate the centroid for the paraboloid of revolution, shown in Fig. 3.

4. Determine the magnitude and location of the resultant force acting on the triangular end plates of the water trough shown in Fig. 4; density = 1000 kg/m^3.

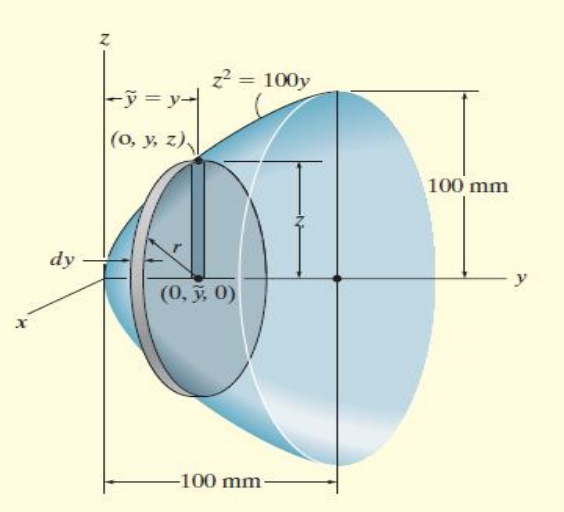

Figure 3

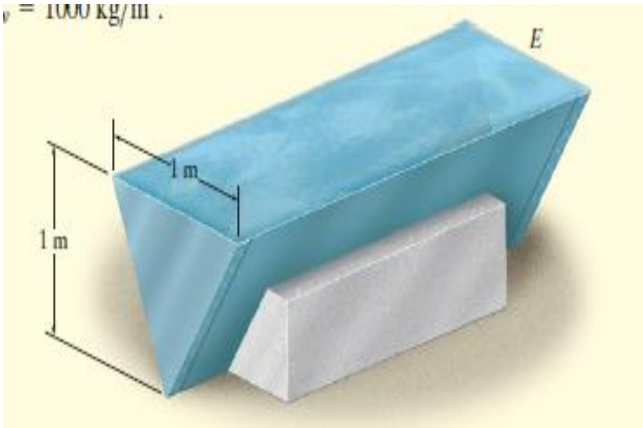

Figure 4

3. Locate the centroid for the paraboloid of revolution, shown in Fig. 3.

4. Determine the magnitude and location of the resultant force acting on the triangular end plates of the water trough shown in Fig. 4; density = 1000 kg/m^3.

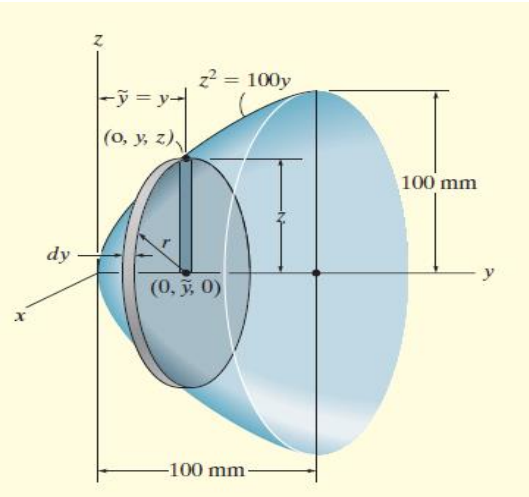

Figure 3

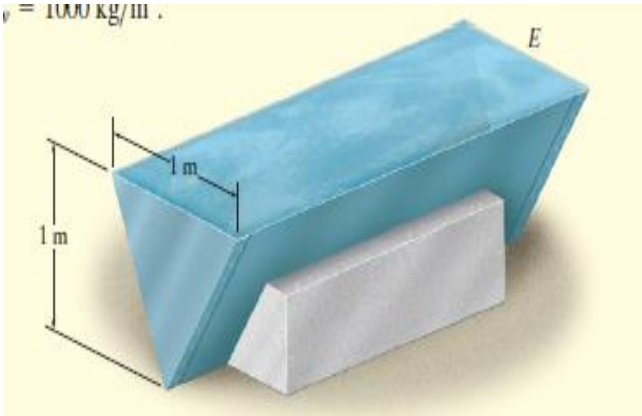

Figure 4