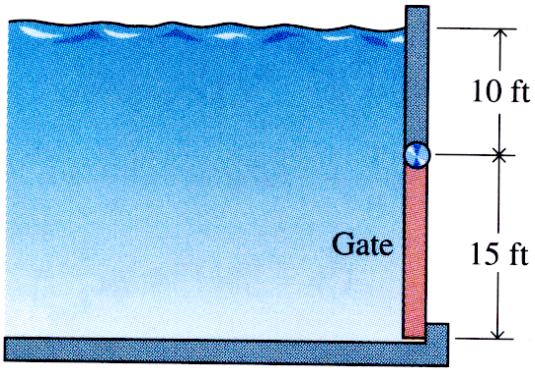
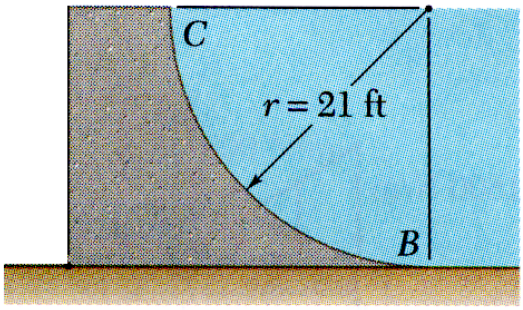
BE50E Fall 2000 Exam 4 Name: _____

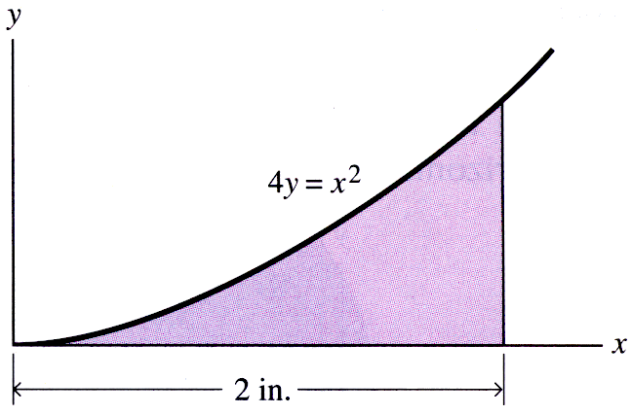
1. The width of the rectangular gate shown is 8 ft. Determine the magnitude of the resultant force **R** exerted on the gate by the water and the location of the center of pressure with respect to the hinge at the top of the gate. Use (= 62.4 lb/ft^3 for the specific weight of the water.



2. The width of the dam shown is 1 ft. Determine the magnitude of the resultant force **R** exerted on the dam by the water. Use $\gamma = 62.4$ lb/ft^3 for the specific weight of the water.



3. For the shaded area shown, determine the radii of gyration k_x and k_y.



4. Determine the principal moments of inertia (I_{xp}, I_{yp}) for the Z-section shown with respect to the axes through the centroid of the area. Show the orientation of the principal axes on the figure or your own sketch of the area.