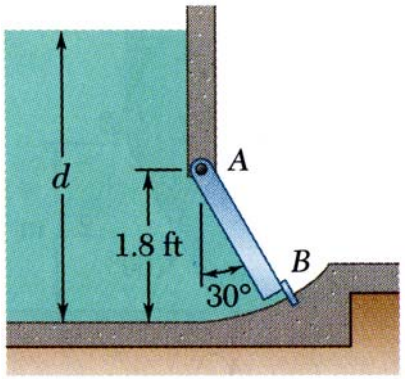
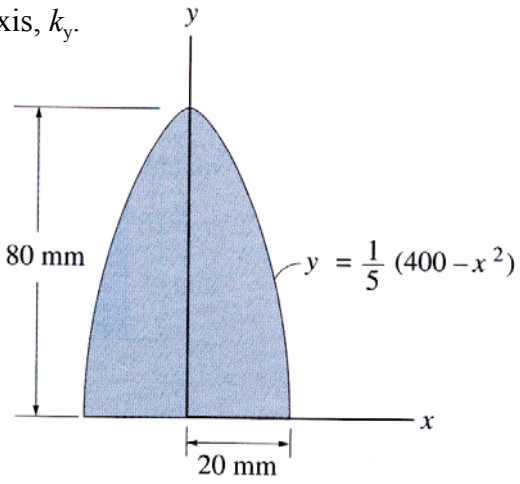
BE 50F - Fall 2001 - Test 4 **Name:** _____

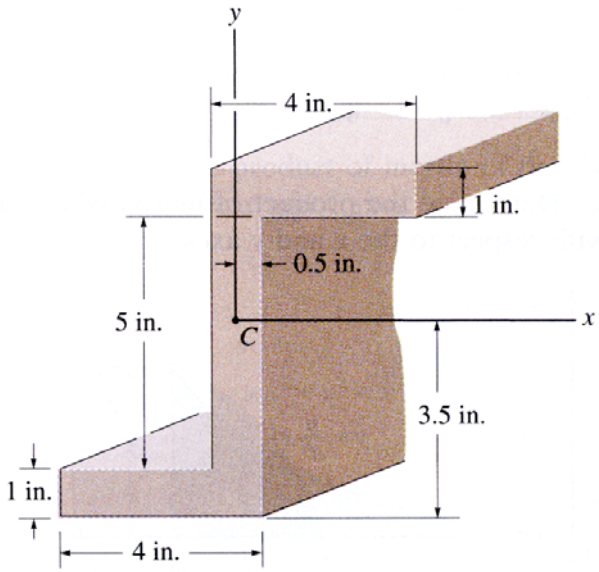
1. The square gate AB is held in the position shown by hinges along its top edge A and by a frictionless stop at B. For a depth of water $d = 3.5$ ft, determine the force exerted on the gate by the stop at B. Assume the weight density of water is $\gamma = 64$ lb/ft^3.



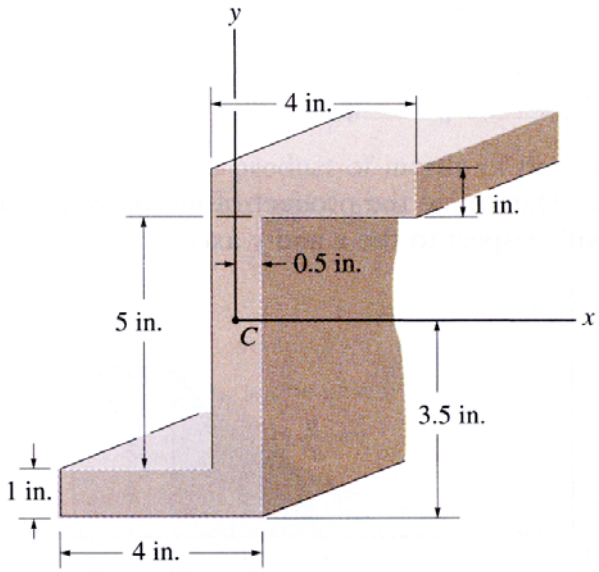
2. Determine the radius of gyration of the shaded area about the y-axis, k_y.



3. Determine I_x, I_y, and I_{xy} for the cross-sectional area with respect to the *x* and *y* axes that have their origin located at the centroid *C*.



4. Part (a) – Determine the direction of the principal axes, 2_p, with origin located at *C*, and the principal moments of inertia, I_{xp} and I_{yp}, of the area about these axes. *(Note that this is the same area used in Problem 3.)*



Part (b) – Draw Mohr's circle for the area above.