6.2 Volumes Using Cylindrical Shells

In-class work:

1. (Exercises #2, #3 / 6.2) Use the shell method to find the volumes of the solids generated by revolving the shaded regions about the indicated axis. (A: 6p; 2p)



- 2. (Exercise #24 c / 6.2) Use the shell method to find the volume of the solid generated by revolving the region bounded by $y = x^3$, y = 8, x = 0 about x = -2. (A: $\frac{336p}{5}$)
- 3. (Exercise #30 / 6.2) Compute the volume of the solid generated by revolving the triangular region bounded by the lines 2y = x + 4, y = x, x = 0 about:

c) the line
$$x = 4$$
 using the shell method.

d) the line y = 8 using the washer method. (A: $\frac{64p}{3}$; 48p)

- 4. (Exercise #41 / 6.2) A bead is formed from a sphere of radius 5 by drilling through a diameter of the sphere with a drill bit of radius 3.
 - a) Find the volume of the bead.
 - b) Find the volume of the removed portion of the sphere. (A: $\frac{256p}{3};\frac{244p}{3}$)
- 5. (Exercise #39 / 6.2) The region shown here is to be revolved about the x-axis to generate a solid. Which of the methods (disk, washer, shell) could you use to find the volume of the solid? How many integrals would be required in each case?

