

## Practice on Volume

A) i) The base of a certain solid is the region bounded above by the line  $y = 9$  and below by the graph of  $y = 4x^2$ . Cross sections perpendicular to the  $y$ -axis are squares. Find the volume of this solid.

ii) A solid has a circular base of radius 1. Parallel cross-sections perpendicular to the base are equilateral triangles. Find the volume of the solid.

B) For each of the following solids, set up integrals that give the volume using *both* the washer/disk method and the method of cylindrical shells. Then compute the integrals using Maple. Make sure both methods give the same answer.

i) The region bounded by  $x = y^2$  and  $x = -y$  rotated about  $x$ -axis.

ii) The region in i) rotated about the line  $y = 5$ .

iii) The region in i) rotated about  $x = 5$ .

iv) Solid obtained by rotating the region bounded by  $y = \sqrt{x-1}$ ,  $y = 0$ ,  $x = 5$  about the  $y$ -axis.