Problem statement Suppose R is the region in the plane bounded below by the curve $y = x^2$ and above by the line $y = 1$.

a) Sketch R. Set up and evaluate an integral that gives the area of R.

b) Suppose a solid has base R and the cross-sections of the solid perpendicular to the y-axis are squares. Sketch the solid and find its volume.

c) Suppose a solid has base R and the cross-sections of the solid perpendicular to the y-axis are equilateral triangles. Sketch the solid and find its volume.