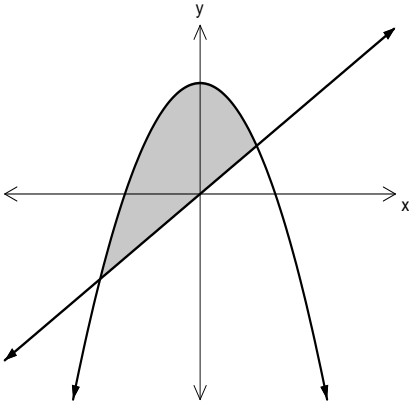


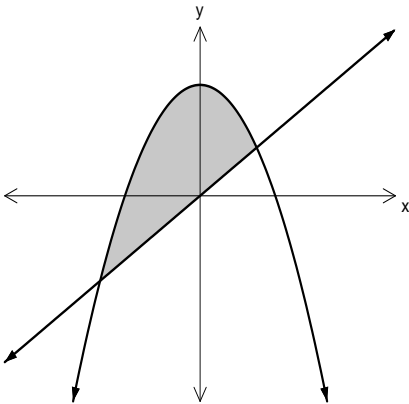
Review - Sample AP Exam Questions - Volumes of Solids

R is the region of area between $y = 3 - x^2$ and $y = x$.

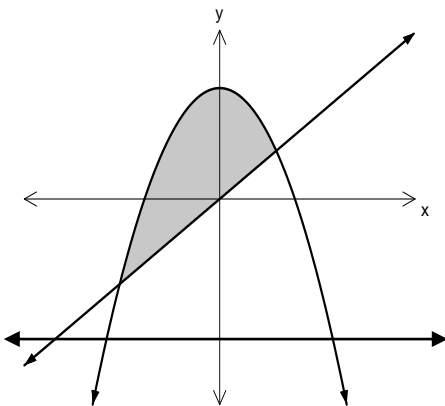
a. Determine the value of R to 3 decimal places. (GC)



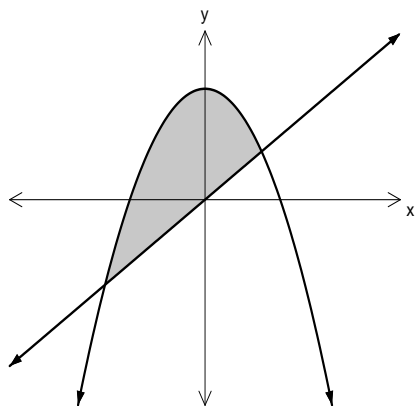
b. Determine the volume of the solid obtained by rotating the part of R in the first quadrant about the y -axis. (GC)



c. Determine the volume of the solid obtained by rotating R about the line, $y = -4$. (GC)



- d. The line $x = k$ divides R into two regions of equal area. Set up an equation that can be used to calculate the value of k . (GC)



- e. The region R is the base of a solid. For this solid, at each x the cross section perpendicular to the x -axis has area $A(x) = 2\cos\left(\frac{\pi x}{4}\right)$. Find the volume of the solid. (NC)

- f. Another solid has the region R in the 3rd quadrant as its base. For this solid, the cross sections perpendicular to the y -axis are rectangles where the height of the rectangle is $h(y) = 3y^2$. Write, but do not evaluate, an integral expression for the volume of the solid.

