

Find the volume of the solid generated by revolving the region bounded by the given lines and curves about the x-axis. Show the work that leads to your answer. Set-up the intergral and then use your calculator to find the volume.

1)  $y = \frac{1}{x}$ ,  $y = 0$ ,  $x = 1$ ,  $x = 8$

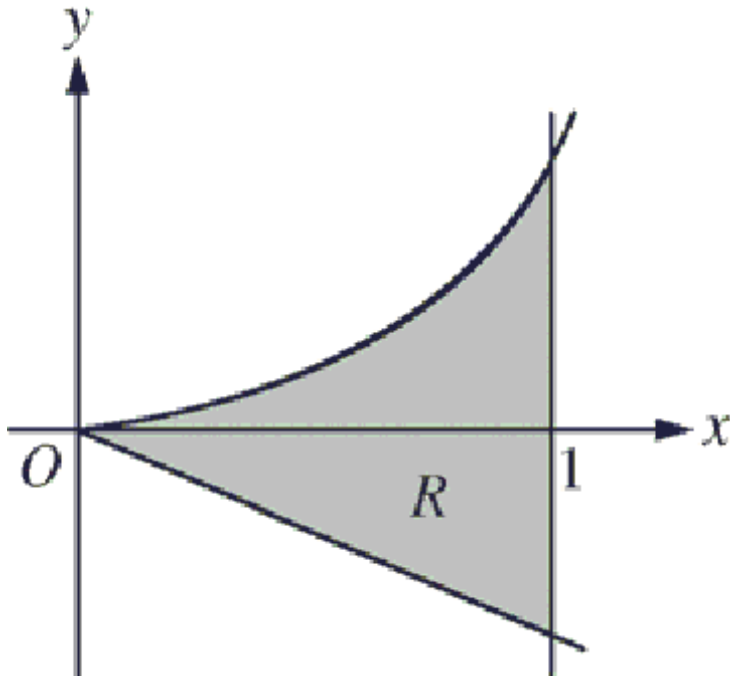
Find the volume of the solid generated by revolving the region bounded by the given lines and curves about the x-axis. Show the work that leads to your answer.

2)  $y = x^2$ ,  $y = 25$ ,  $x = 0$

For problems 3 and 4; Find the volume of the solid generated by revolving the region about the y-axis. Show the work that leads to your answer

3) The region enclosed by  $x = \frac{y^2}{3}$ ,  $x = 0$ ,  $y = 0$ ,  $y = 3$

4) The region in the first quadrant bounded on the left by  $y = x^3$ , on the right by the line  $x = 4$ , and below by the x-axis. Set-up the intergral and then use your calculator to find the volume.



5)

5. Let  $R$  be the shaded region bounded by the graph of  $f(x) = xe^{x^2}$ , the line  $g(x) = -2x$ , and the vertical line  $x = 1$ , as shown in the figure above. ( $R$  is the shaded region in both quadrant 1 and 4)
- Write, but do not evaluate an intergral expression for the area of  $R$ .
  - Write, but do not evaluate, an integral expression that gives the volume of the solid generated when  $R$  is rotated about the horizontal line  $y = -2$ .
  - For this solid with base  $R$ , the cross sections are **perpendicular to the x-axis** are **squares**. Write, but **do not** evaluate, an integral expression for the volume of the solid.
  - Write, but do not evaluate, an expression involving one or more integrals that gives the perimeter of  $R$ .