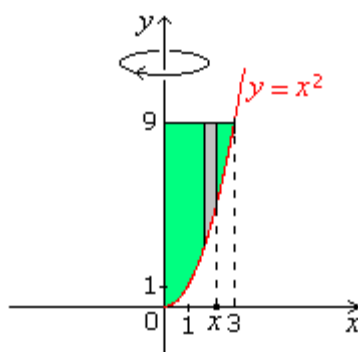


Name: _____

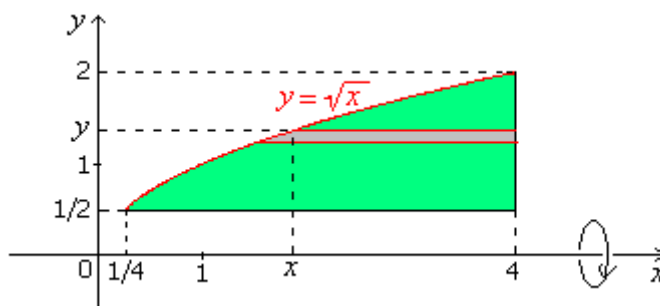
Volume: The Shell Method

- 1) Use the shell method to find the volume of the solid generated by revolving the plane region bounded by $y = x^2$, $y = 9$, and $x = 0$ about the y -axis.

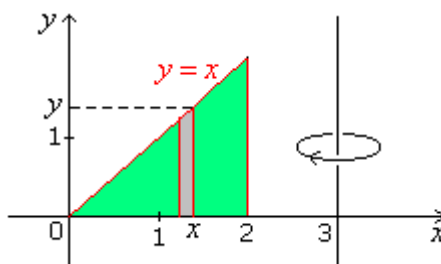


- 2) Employ the method of cylindrical shells to find the volume of the solid generated by revolving the plane region bounded by:

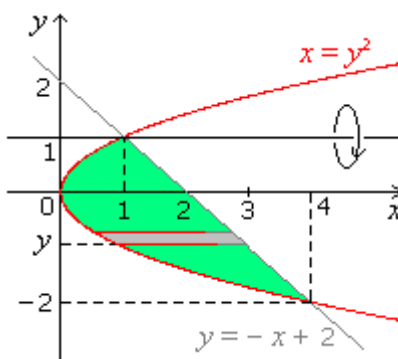
$$y = \sqrt{x}, \quad y = \frac{1}{2}, \quad \text{and} \quad x = 4 \quad \text{about the } x\text{-axis}$$



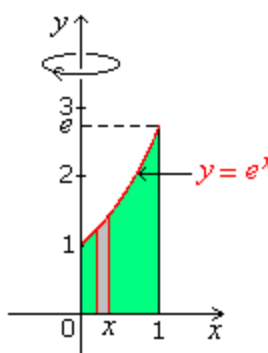
- 3) Utilize the shell method to find the volume of the solid generated by revolving the triangular region bounded by $y = x$, $y = 0$, and $x = 2$ about the line $x = 3$.



- 4) The plane region bounded by $x = y^2$ and $y = -x + 2$ is revolved about the line $y = 1$. Find the volume of the generated solid by using the shell method.



- 5) Find the volume of the solid generated by revolving the plane region bounded by $y = e^x$, $y = 0$, $x = 0$, and $x = 1$ about the y -axis.



- 6) Find the volume generated by revolving the given region about the given axis.
- 1) The region bounded by $y = x^4$, $x = 1$, and $y = 0$ about the y - axis.
 - 2) The region in the first quadrant bounded by $x = y - y^3$, $x = 1$, and $y = 1$, about the x -axis.
 - 3) The region in the first quadrant bounded by $y = x^3$ and $y = 4x$, about the x -axis.
 - 4) The region bounded by $y = 2x - x^2$ and $y = x$ about the y - axis.
 - 5) The region between the curve $y = e^{-x}$ and the x -axis from $x = 1$ to $x = \ln 10$ is revolved about the x -axis.