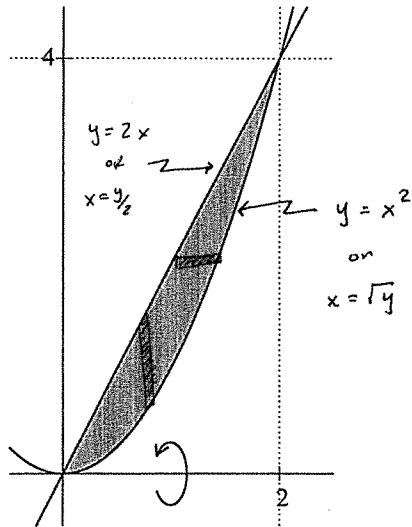


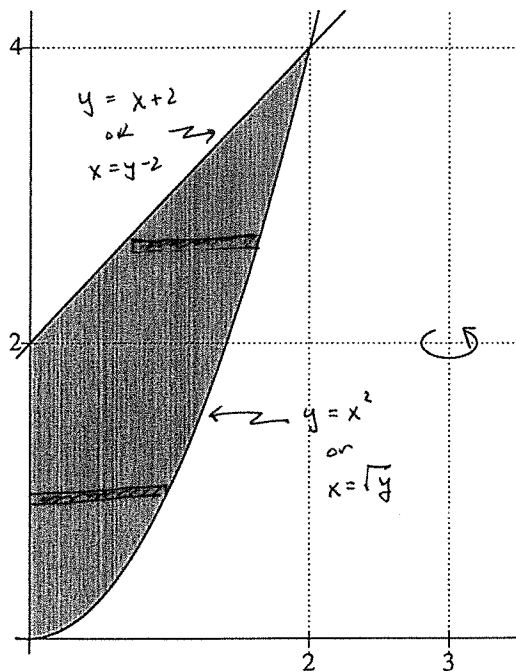
1. [5] The region bounded by the graphs of $y = x^2$ and $y = 2x$, the shaded region in the figure, is revolved around the x -axis. Express the volume of the resulting solid as an integral using the Disk Method and the Shell Method. Do not evaluate either integral.



$$(a) V_{Disk} = \pi \int_0^2 \left[(2x)^2 - (x^2)^2 \right] dx$$

$$(b) V_{Shell} = 2\pi \int_0^4 \left(y \right) \left(\sqrt{y} - \frac{y}{2} \right) dy$$

2. [5] The region in the first quadrant bounded by the graphs of $y = x^2$ and $y = x + 2$, the shaded region in the figure, is revolved around the line $x = 3$. Express the volume of the resulting solid as an integral using the Disk Method and the Shell Method. Do not evaluate either integral.



$$(a) V_{Disk} = \pi \int_0^2 \left[3^2 - (3 - \sqrt{y})^2 \right] dy + \int_2^4 \left[(3 - (y - 2))^2 - (3 - \sqrt{y})^2 \right] dy$$

$$(b) V_{Shell} = 2\pi \int_0^2 (3 - x) \left((x + 2) - x^2 \right) dx$$