

(1) [7] The region bounded by the curves $y = x$ and $y = \sqrt{x}$ is rotated about the line $y = 1$. Determine the volume of the resulting solid. (The disk method would work best here.)

(2) [8] The region bounded by the curves $y = x^2$, $y = 0$, $x = 1$ and $x = 2$ is rotated about the line $x = 4$. Determine the volume of the resulting solid. (Cylindrical shells would be best here.)