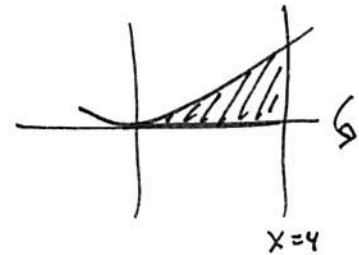


Instructions: Work the problems below as directed. Show all work. Clearly mark your final answers. Use exact values unless the problem specifically directs you to round. Simplify as much as possible. Partial credit is possible, but solutions without work will not receive full credit.

1. Sketch the area bounded by $y = 2x^2$, $x = 0$, $x = 4$, $y = 0$. Use the washer method to find the volume of the solid rotated around the x-axis.

$$\pi \int_0^4 (2x^2)^2 dx = \pi \int_0^4 4x^4 dx =$$

$$\frac{\pi}{5} \cdot 4x^5 \Big|_0^4 = \frac{4\pi}{5} (4)^5 = \frac{4096\pi}{5}$$



2. Sketch the graph of the region bounded by $y = \sqrt{x}$, $y = 0$, $x = 1$. Use the shell method to find the volume of the solid if this region is rotated around the y-axis.

$$2\pi \int_0^1 x\sqrt{x} dx = 2\pi \int_0^1 x^{3/2} dx =$$

$$2\pi \frac{2}{5} x^{5/2} \Big|_0^1 = \frac{4\pi}{5}$$

