Chapter 7 Review 1

1. We began this chapter by finding the area between two curves. Sketch the region bounded by the graphs of $y = x$ and $y = x^3$ and find its area.

2. Next, we found the volume of solids with known cross sections. Find the volume of a solid that has a circular base given by $x^2 + y^2 = 9$ and all cross sections parallel to the y-axis are squares. Find the volume of the solid.

3. Then we began finding the volume of a solid which was formed by revolving a single curve around the x-axis. Sketch the region bounded by the graphs of the equations $y = \sqrt{x}$, $y = 0$, $x = 4$ and find the volume of the solid generated by revolving the region about the x-axis.
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4. Then we continued finding volumes of solids of revolution but changed the axis of revolution. We changed the axis of revolution to the y-axis. Sketch the region bounded by the graphs of the equations \( y = \sqrt{x}, y = 2, x = 0 \) and find the volume of the solid generated by revolving the region about the y-axis.

5. Then, we took the area between two curves and revolved them about the x-axis and then the y-axis and other horizontal and vertical lines. Find the volume of the solid generated by the region created in problem #1, using only the part from \( 0 \leq x \leq 1 \):

a) rotated about the x-axis
b) rotated about the y-axis
c) rotated about the line \( x = 2 \)
d) rotated about the line \( y = 2 \)