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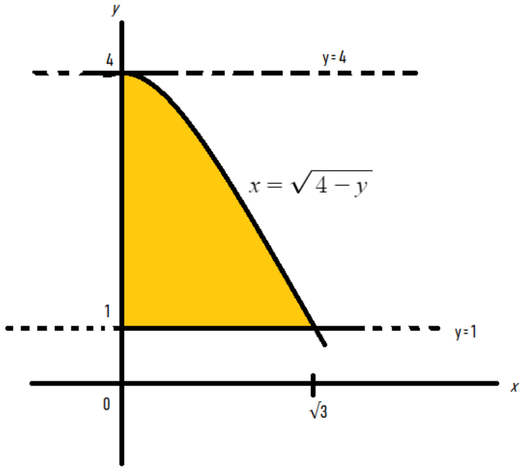
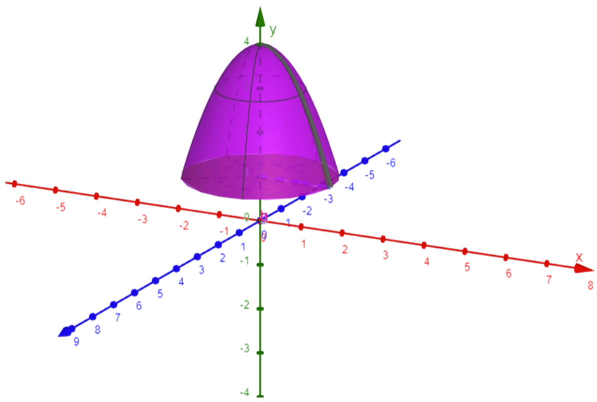
The objective of this question is to calculate the volume of solid generated by revolution of a planar region. Before proceeding into the solution, it is advised to check the theoretical part behind it.



$x = \sqrt{4-y}$ is a downward facing parabola on positive x-axis with vertex (0,4).

´$y = 4$ and $y = 1$ are a straight line.

According to the question, we are supposed to revolve the region around the y-axis. On Revolving around the $y-$ axis, a solid of revolution is obtained.



Remember that, the volume of the solid of revolution formed by revolving region around the y-axis is given by,

$\mathbf{V} = \pi \int_a^b f^2(y) - g^2(y)\, dy$, where $f(y)$ **is the curve on the right side** and $g(y)$ **is the curve on the left side** and $y \in [a, b]$.

In this case, the function on the right side is $f(y) = \sqrt{4-y}$ and function on the left side is $g(y) = 0$ and $y \in [1, 4]$.

$$
\begin{aligned}
V &= \pi \int_a^b f^2(y) - g^2(y)\, dy \\
&= \pi \int_1^4 (\sqrt{4-y})^2\, dy \\
&= \pi \left[4y - \frac{y^2}{2} \right]_1^4 \\
&= \frac{9\pi}{2} \text{ cubic units}
\end{aligned}
$$