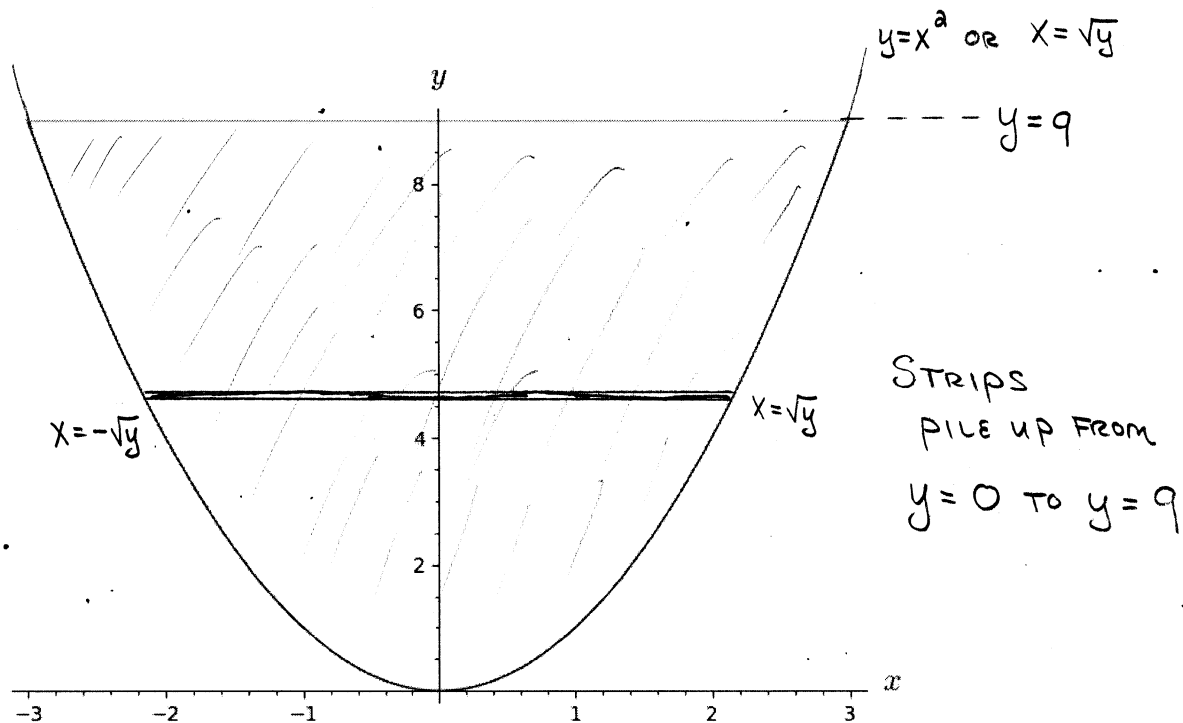# Example

The base of a solid is the region in the xy-plane that is bounded by the graphs of $y = x^2$ and $y = 9$. Cross sections perpendicular to the y-axis are right isosceles triangles. Find the volume of the solid.

Solution

$y = x^2$ or $X = \sqrt{y}$

$---- y = 9$

$X = -\sqrt{y}$

$X = \sqrt{y}$

STRIPS PILE UP FROM $y = 0$ TO $y = 9$

LENGTH OF STRIP AT $y = \sqrt{y} - (-\sqrt{y}) = 2\sqrt{y}$

AREA OF CROSS SECTION AT $y = \frac{1}{2}(2\sqrt{y})^2 = 2y$

(RIGHT, ISOS. $\triangle$)

$$\text{VOLUME} = \int_0^9 2y \, dy = y^2 \Big|_0^9 = \boxed{81}$$