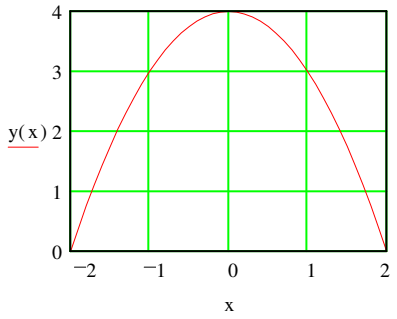
Integrating for Area and Volume.

The Area limited by y=0 and the curve $4 - x^2 = A$ $y(x) := 4 - x^2$

$$A = \int_{-2}^{2} 4 - x^2 \, dx = 10.667$$



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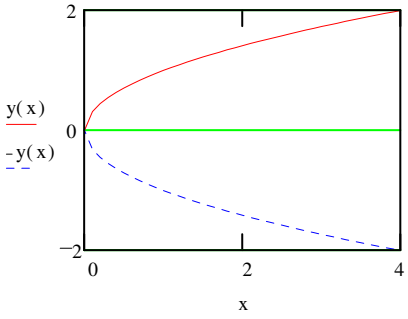
A volume can be created by a rotating function, let's say that a function $y(x) := \sqrt{x}$ is the function that rotates around the X axis.

We can say that the Integral below represents the Volume of the rotating body.

$$\int_{0}^{4} \left(\sqrt{x}\right)^2 \cdot \pi \, dx = 25.133$$



$\left(\sqrt{x}\right)^2 \cdot \pi$ is the area of a disk at x and dx the thickness of the disk.

All the ultimately dx thin disks from 0 to 4 will be summed up by the Integral and therefore = the Volume of the rotating body.