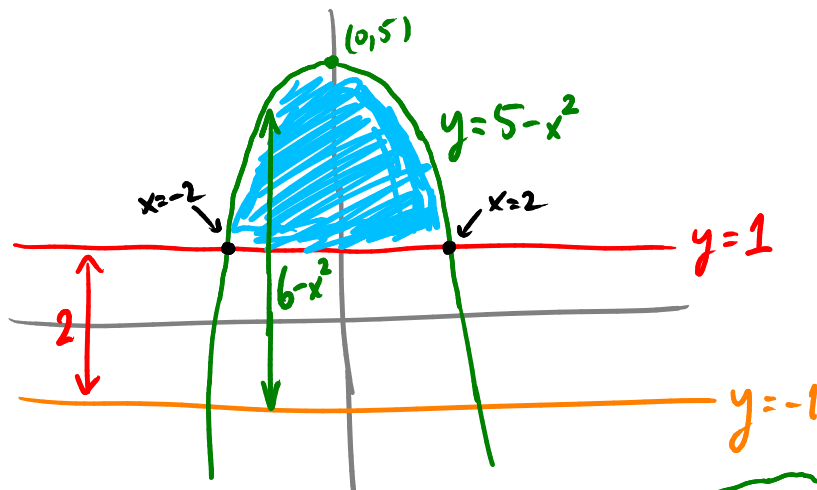


Ex: Find the volume of solid obtained by rotating the region between $y = 5 - x^2$ and $y = 1$ around the line $y = -1$.

Intersection pts:

$$1 = 5 - x^2$$

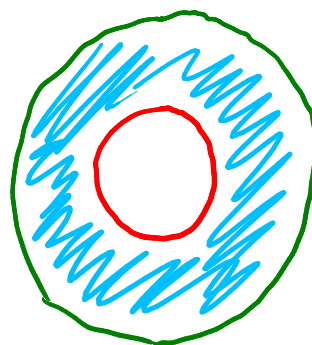
$$x = \pm 2$$



Cross sections at fixed x look like washers:

radius of inner circle = 2

" " outer circle = $6 - x^2$

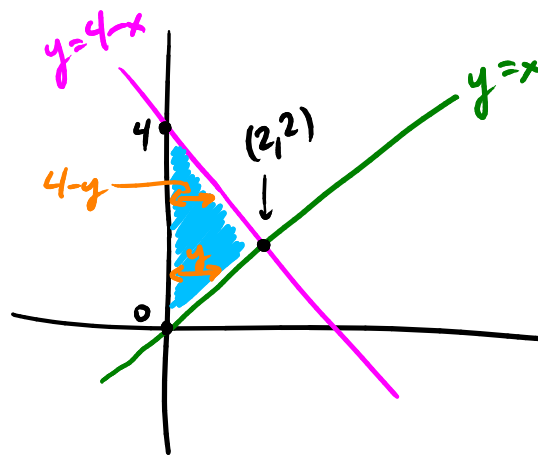


$$V = \int_{-2}^2 A(x) dx = \int_{-2}^2 \pi((6-x^2)^2) - \pi(2^2) dx$$

$$= \underline{\underline{\frac{384\pi}{5}}}$$

Ex Find the volume of the solid obtained by rotating the region between

$y=x$
 $y=4-x$
and the y -axis
around the y -axis.



$$y=4-x$$
$$x=4-y$$

$$\begin{aligned} V &= \int_0^4 dy A(y) = \int_0^2 dy A(y) + \int_2^4 dy A(y) \\ &= \int_0^2 dy \pi y^2 + \int_2^4 dy \pi (4-y)^2 \\ &= \frac{8\pi}{3} + \frac{8\pi}{3} \\ &= \underline{\underline{\frac{16\pi}{3}}} \end{aligned}$$