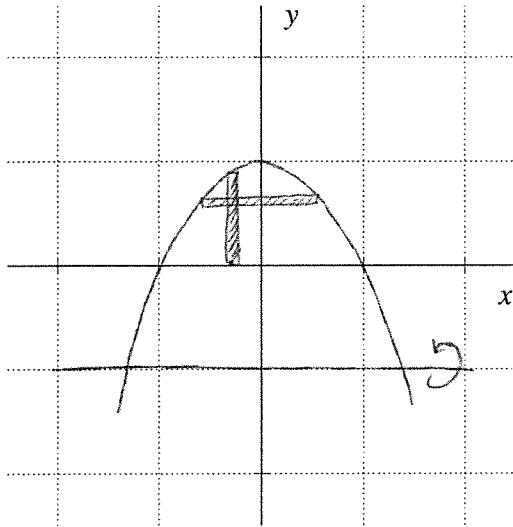


1. 4 The region bounded by the graph of $y = 1 - x^2$ and the x -axis is revolved around the line $y = -1$. Sketch the region on the provided grid. Express the volume of the resulting solid as an integral using the Disk Method and the Shell Method. **Do not evaluate either integral.**



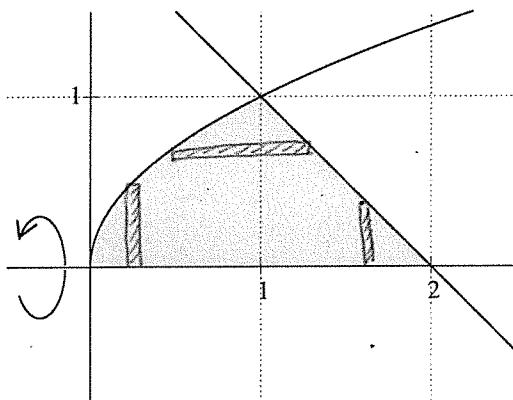
$$(a) V_{Disk} = \pi \int_{-1}^1 \left[\left[(1-x^2) - (-1) \right]^2 - (1)^2 \right] dx$$

$$= \pi \int_{-1}^1 \left[(2-x^2)^2 - 1 \right] dx$$

$$(b) V_{Shell} = 2\pi \int_0^1 (y+1) (\sqrt{1-y} - (-\sqrt{1-y})) dy$$

$$= 2\pi \int_0^1 (y+1) (2\sqrt{1-y}) dy$$

2. 6 The region in the first quadrant bounded by the graphs of $y = \sqrt{x}$, $y = 2 - x$, and $y = 0$, the shaded region in the figure, is revolved around the x -axis. Express the volume of the resulting solid as an integral using the Disk Method and the Shell Method. **Do not evaluate either integral.**



$$(a) V_{Disk} = \pi \int_0^1 (\sqrt{x})^2 dx + \pi \int_1^2 (2-x)^2 dx$$

$$(b) V_{Shell} = 2\pi \int_0^1 (y) (2-y-y^2) dy$$