4. [6 points]
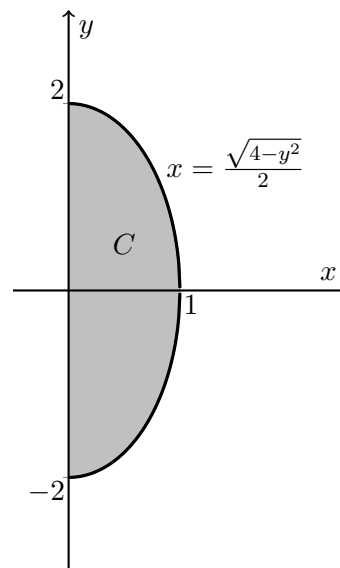
Mike owns Mike's Sweet Haven, a bakery that specializes in elegant, custom-made baked goods. With summer approaching, he decides to try something new.

He plans to create a new type of chocolate using the shaded region C, which is bounded by the curves

$$x = \frac{\sqrt{4-y^2}}{2}, \text{ and } x = 0.$$

as illustrated to the right.

a. [4 points] Write an expression involving one or more integrals for the volume of the chocolate obtained by revolving the region C about the y-axis. **Do not** evaluate any integrals in your expression.

Answer: _____

b. [2 points] If Mike were to take a TRAP(4) estimate of the integral you obtained in part **a.**, would he get an underestimate or an overestimate of the volume of the chocolate? No justification is required.

Circle one: **Underestimate**   **Overestimate**