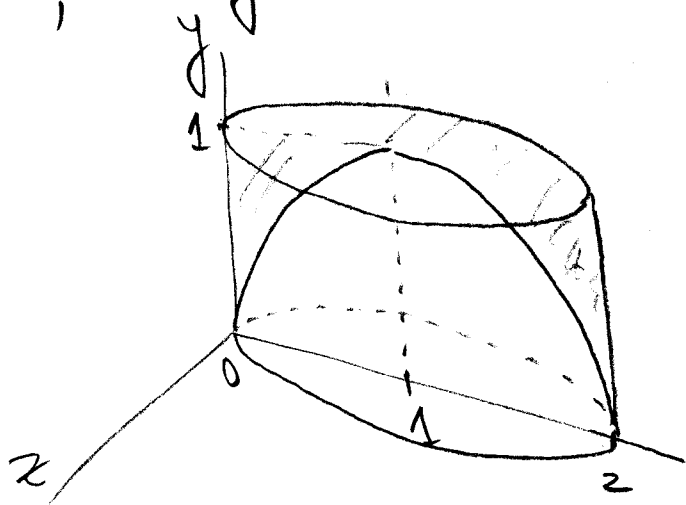
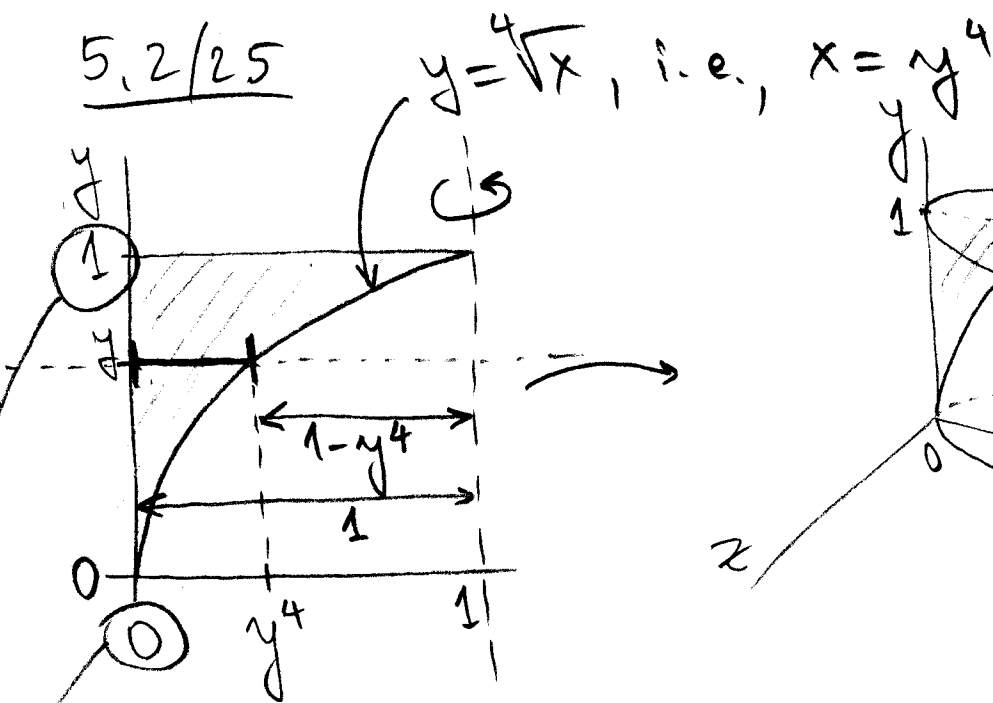


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The cross-section with a plane perpendicular to the y -axis and passing through the point $(0, y, 0)$ is an annulus with inner radius $(1-y^4)$ and outer radius 1 , so

$$A(y) = \pi \cdot 1^2 - \pi (1-y^4)^2 = \pi [1 - (1-y^4)^2]$$

hence

$$V = \int_0^1 A(y) dy = \int_0^1 \pi [1 - (1-y^4)^2] dy.$$