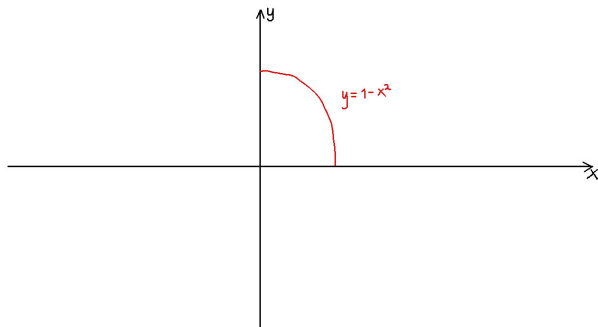
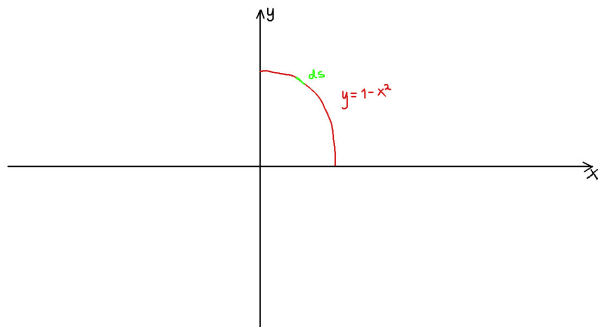
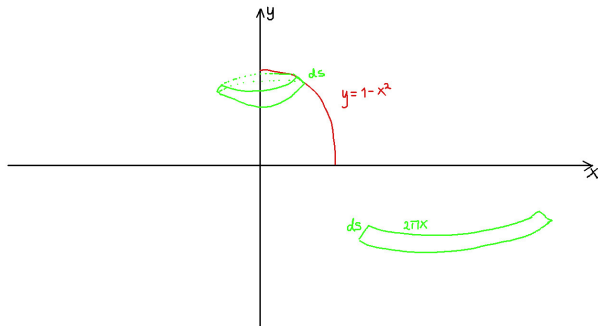


Bestäm arean av den yta som uppstår då kurvan $y = 1 - x^2$, $0 \leq x \leq 1$ roteras ett varv kring y -axeln.







$$ds = \sqrt{1 + (y')^2} dx = \sqrt{1 + 4x^2} dx.$$

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$$dA = 2\pi x ds = 2\pi x \sqrt{1 + 4x^2} dx.$$

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$$\int_0^1 dA = \int_0^1 2\pi x \sqrt{1 + 4x^2} dx =$$

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$$dA = 2\pi x ds = 2\pi x \sqrt{1 + 4x^2} dx.$$

$$\begin{aligned} \int_0^1 dA &= \int_0^1 2\pi x \sqrt{1 + 4x^2} dx = \\ &\dots = \frac{\pi(5\sqrt{5} - 1)}{6}. \end{aligned}$$

Svar: $\frac{\pi(5\sqrt{5}-1)}{6}$.