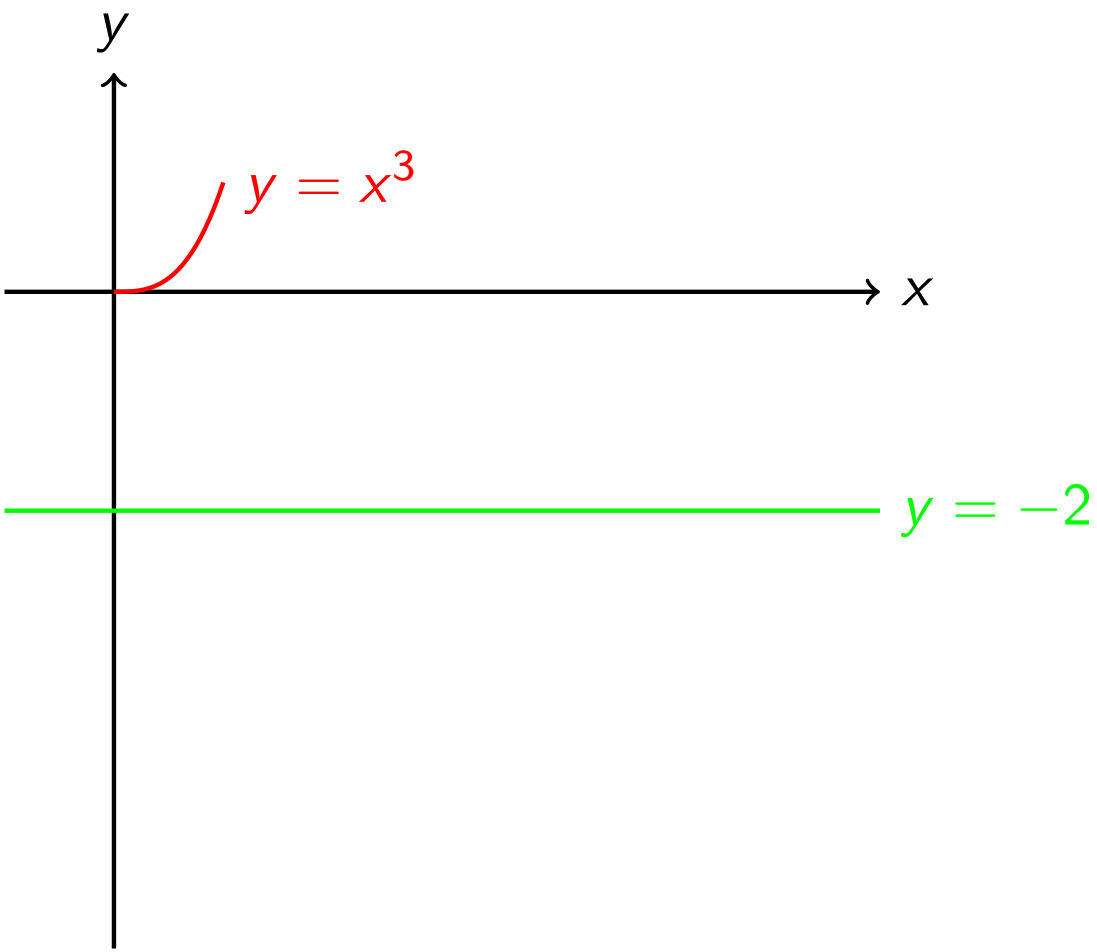
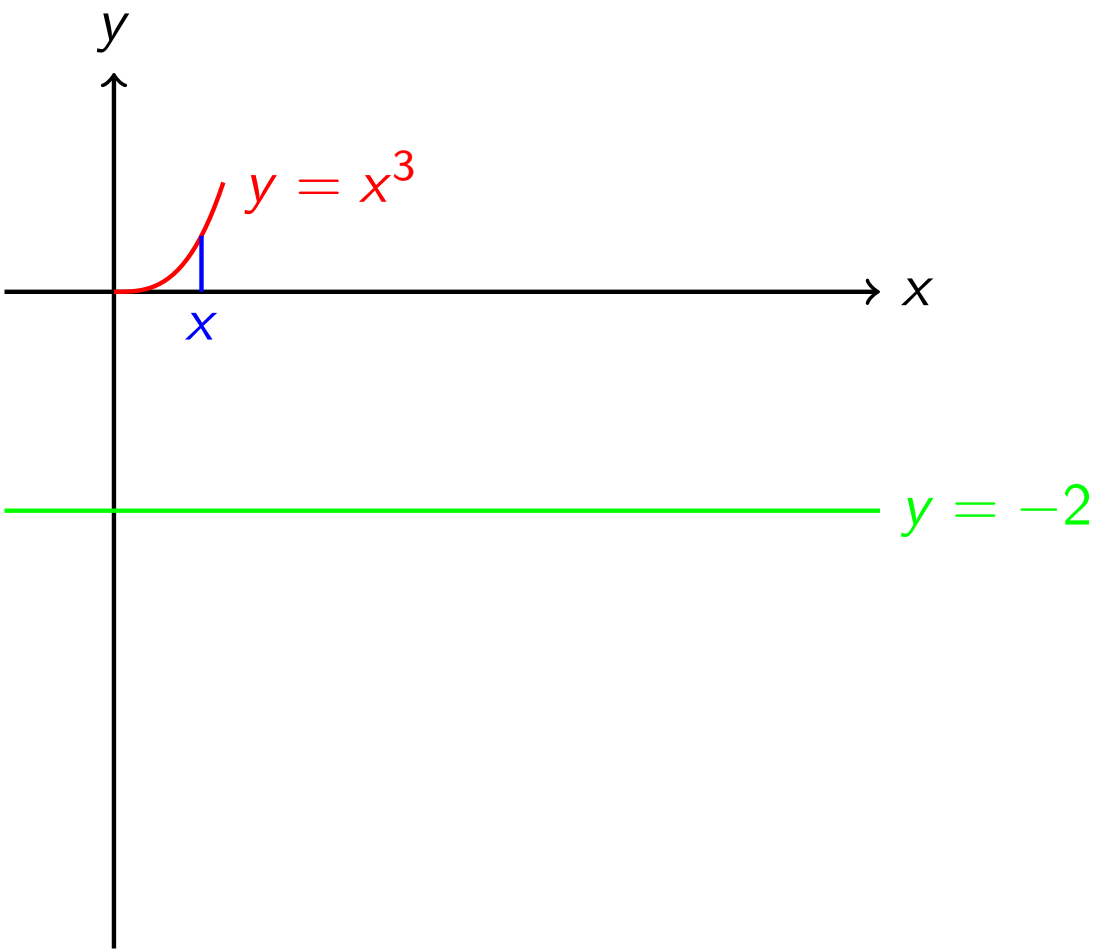
Exempel

Bestäm volymen som uppstår då området $0 \leq x \leq 1$, $0 \leq y \leq x^3$ roterar ett varv kring $y = -2$.

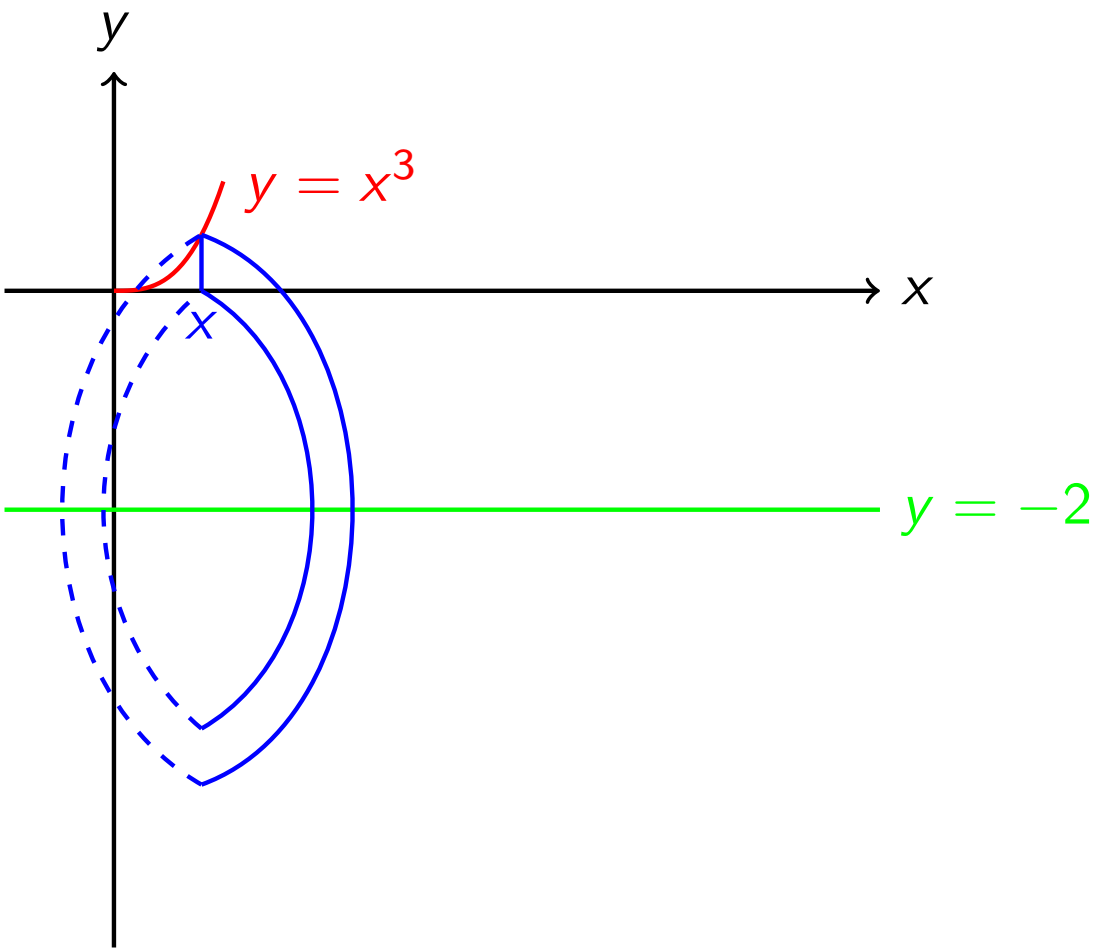
Lösning



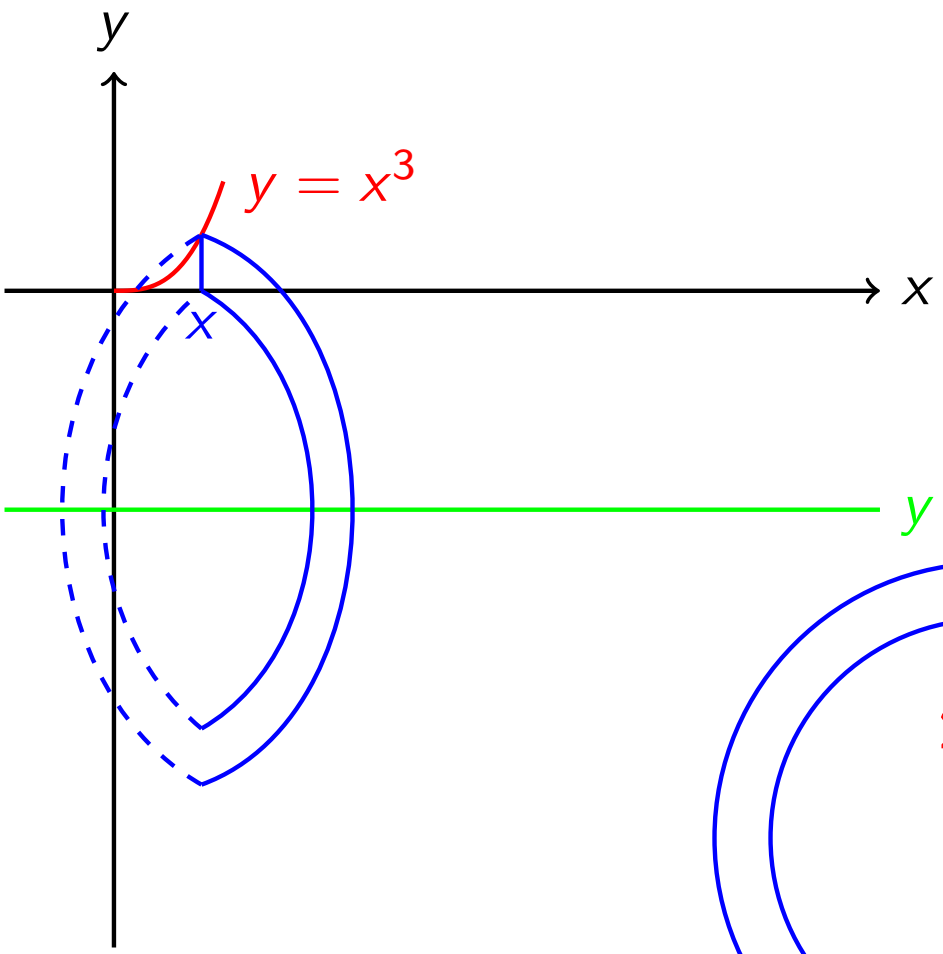
Lösning



Lösning



Lösning



$$\text{Area} = \pi((2 + x^3)^2 - 2^2)$$

Alltså gäller

$$dV = \pi(x^6 + 4x^3)dx.$$

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Så

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$$\ldots = \frac{8\pi}{7}.$$

Svar: $\frac{8\pi}{7}$.