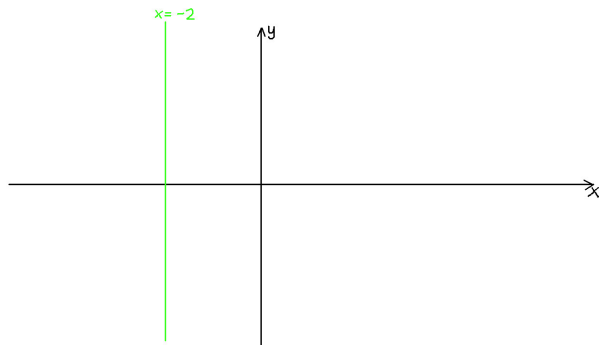
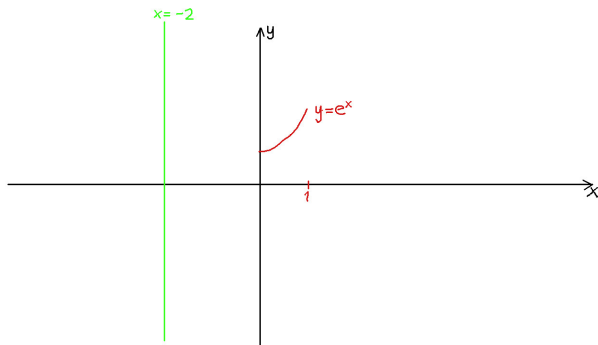
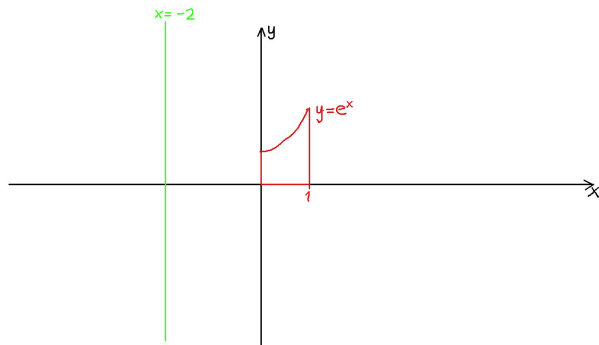


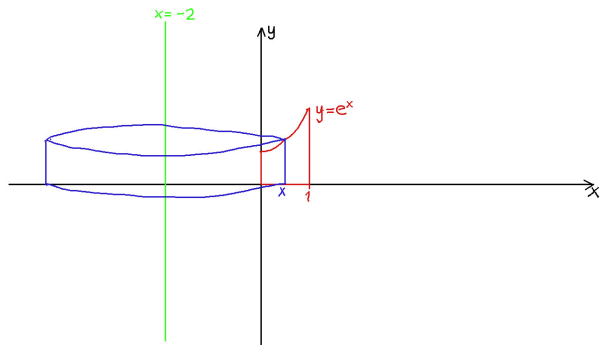
Exempel

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









$$2\pi(x+2)$$

$$\text{Area } 2\pi(x+2)e^x$$

$$e^x$$

Alltså gäller

$$dV = 2\pi(x + 2)e^x dx.$$

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Så

$$\int_0^1 dV = \int_0^1 2\pi(x + 2)e^x dx =$$

Alltså gäller

$$dV = 2\pi(x + 2)e^x dx.$$

Så

$$\begin{aligned}\int_0^1 dV &= \int_0^1 2\pi(x + 2)e^x dx = \\ &\dots = 2\pi(2e - 1).\end{aligned}$$

Svar: $2\pi(2e - 1)$.