

Bestimmtes Integral

Beispiele

$$1) \int_0^{10} 10 x \, dx = [0,5 \cdot 10x^2]_0^{10} = [5x^2]_0^{10} = 500 - 0 = 500$$

$$2) \int_{-10}^{10} 4 x^3 \, dx = [0,25 \cdot 4x^4]_{-10}^{10} = [x^4]_{-10}^{10} = 10^4 - (-10)^4 = 10\,000 - 10\,000 = 0$$

$$3) \int_{-10}^{10} 3 x^2 \, dx = [x^3]_{-10}^{10} = [x^3]_{-10}^{10} = 10^3 - (-10)^3 = 1\,000 - (-1\,000) = 2\,000$$

$$4) \int_{-10}^{10} 1 \, dx = [x]_{-10}^{10} = [x]_{-10}^{10} = 10 - (-10) = 10 - (-10) = 20$$

$$5) \int_0^1 e^{\ln(3) \cdot x} \, dx = \left[\frac{1}{\ln(3)} e^{\ln(3) \cdot x} \right]_0^1 = \frac{1}{\ln(3)} e^{\ln(3) \cdot 1} - \frac{1}{\ln(3)} e^{\ln(3) \cdot 0} = \frac{1}{\ln(3)} e^{\ln(3)} - \frac{1}{\ln(3)} \approx 1,73$$