

# Integralrechnung 1

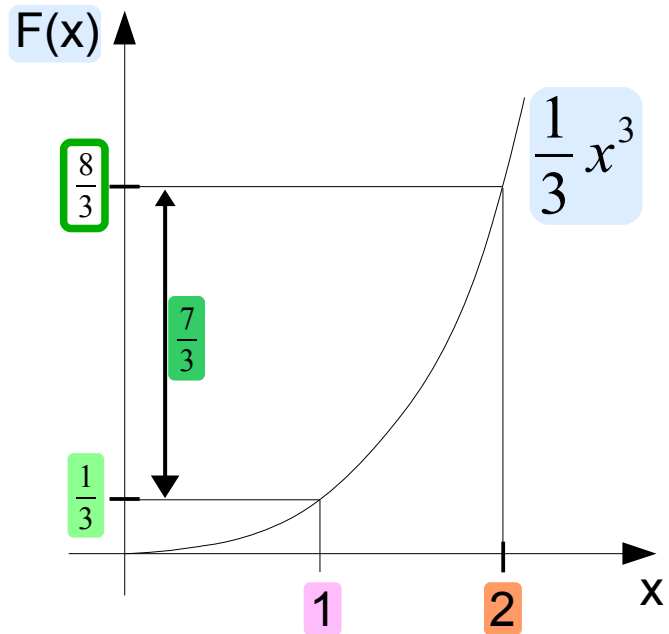
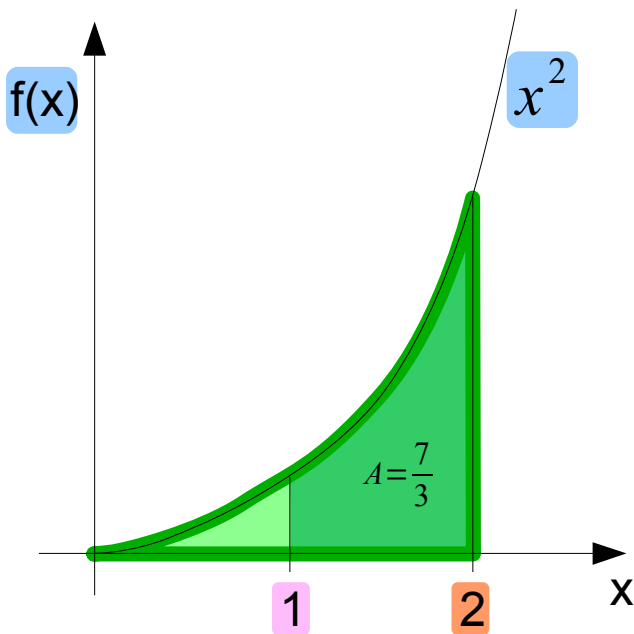
Allgemein:

$$A = \int_a^b f(x) dx = \left[ F(x) \right]_a^b = F(b) - F(a)$$

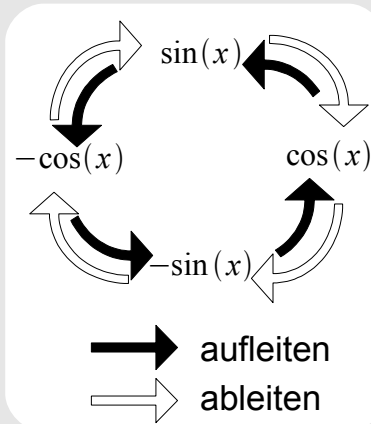
Beispiel:

Stammfunktion bilden  
(„aufleiten“)

$$A = \int_1^2 x^2 dx = \left[ \frac{1}{3} x^3 \right]_1^2 = \frac{1}{3} \cdot 2^3 - \frac{1}{3} \cdot 1^3 = \frac{8}{3} - \frac{1}{3} = \frac{7}{3}$$



f(x)	F(x)
$a \cdot x^n$	$a \cdot \frac{1}{n+1} \cdot x^{n+1} = \frac{a \cdot x^{n+1}}{n+1}$
$\frac{1}{x}$	$\ln(x)$
$e^x$	$e^x$
$\ln(x)$	$x \cdot (\ln(x) - 1)$



Partielle Integration (Umkehrung der Produktregel)

$$\int u' \cdot v = u \cdot v - \int u \cdot v'$$