edoceralph

**Faktorregel Integration**

$$\int c \cdot g(x)\,dx = c \cdot \int g(x)\,dx$$

### *Aufgabe 1*

$f(x) = 6 \cdot x^2$

$c = 6;\ g(x) = x^2$

$$\Rightarrow \quad \int 6 \cdot x^2\,dx = 6 \cdot \int x^2\,dx = 6 \cdot \frac{1}{3}x^3 = 2x^3$$

### *Aufgabe 2*

$f(x) = 8 \cdot \sin(x)$

$c = 8;\ g(x) = \sin(x)$

$$\Rightarrow \quad \int 8 \cdot \sin(x)\,dx = 8 \cdot \int \sin(x)\,dx = 8 \cdot (-\cos(x)) = -8 \cdot \cos(x)$$

### *Aufgabe 3*

$f(x) = 4 \cdot e^{2x}$

$c = 4;\ g(x) = e^{2x}$

$$\Rightarrow \quad \int 4 \cdot e^{2x}\,dx = 4 \cdot \int e^{2x}\,dx = 4 \cdot \frac{1}{2}e^{2x} = 2 \cdot e^{2x}$$

### *Aufgabe 4*

$f(x) = 2 \cdot \ln(x)$

$c = 2;\ g(x) = \ln(x)$

$$\Rightarrow \quad \int 2 \cdot \ln(x)\,dx = 2 \cdot \int \ln(x)\,dx = 2 \cdot \frac{1}{x} = \frac{2}{x}$$