

# 19. Schulübung

## Integrieren - Übungen

→ Substitution:

$$\begin{aligned} \cdot) \int \frac{5}{3-2x} dx &= -\frac{5}{2} \int \frac{1}{z} dz = -\frac{5}{2} \ln|z| = \\ &= \underline{\underline{-\frac{5}{2} \ln|3-2x| + C}} \end{aligned}$$

$$3-2x = z$$

$$dx = \frac{dz}{-2}$$

$$\begin{aligned} \cdot) \int x(3x^2-1)^7 dx &= \int \frac{x \cdot z^7}{6x} dz = \\ &= \frac{z^8}{6 \cdot 8} = \underline{\underline{\frac{(3x^2-1)^8}{48} + C}} \end{aligned}$$

$$z = 3x^2 - 1$$

$$dx = \frac{dz}{6x}$$

→ Partielles Integrieren:

$$\begin{aligned} \int \underset{g}{3x} \cdot \underset{f}{a^x} dx &= \frac{a^x}{\ln a} \cdot 3x - \int \frac{a^x}{\ln a} \cdot 3 dx = \frac{a^x}{\ln a} \cdot 3x - \frac{3}{\ln a} \cdot \frac{a^x}{\ln a} = \\ &= \underline{\underline{\frac{3a^x}{\ln a} \left( x - \frac{1}{\ln a} \right) + C}} \end{aligned}$$

$$\cdot) \int 1 \cdot \ln x dx = x \cdot \ln x - \int x \cdot \frac{1}{x} dx = \underline{\underline{x \cdot \ln x - x + C}}$$

→ Vermischt:

$$\cdot) \int x \cdot \cos x dx$$

$$\cdot) \int e^{0,5x} \cdot x dx$$

} siehe vorige Schulübung