

Lösungen

Aufgabe 1:

$$\begin{aligned} \text{a) } F(x) &= \frac{3}{4}x^4 - 2x^2 + x + c \\ 5 &= \frac{3}{4} \cdot 2^4 - 2 \cdot 2^2 + 2 + c = 12 - 8 + 2 + c \\ 5 &= 6 + c \quad c = -1 \\ \underline{\underline{F(x) &= \frac{3}{4}x^4 - 2x^2 + x - 1}} \end{aligned}$$

$$\begin{aligned} \text{b) } F(x) &= \frac{4}{3}x^3 + x^2 - 3x + c \\ 4 &= \frac{4}{3} \cdot 0^3 + 0^2 - 3 \cdot 0 + c \quad c = 4 \\ \underline{\underline{F(x) &= \frac{4}{3}x^3 + x^2 - 3x + 4}} \end{aligned}$$

$$\begin{aligned} \text{c) } F(x) &= x^5 - x^3 - 2x + c \\ 0 &= 2^5 - 2^3 - 2 \cdot 2 + c = 32 - 8 - 4 + c \\ &\quad c = -20 \\ \underline{\underline{F(x) &= x^5 - x^3 - 2x - 20}} \end{aligned}$$

Aufgabe 2:

$$\begin{aligned} \text{a) } F'(x) &= 20x^3 & F(x) &= 5x^4 - 8 \\ & & F(x) &= 5x^4 + 1 \end{aligned}$$

$$\begin{aligned} \text{b) } F'(x) &= 12x^2 - 10x + 1 \\ F(x) &= 4x^3 - 5x^2 + x + 1 \\ F(x) &= 4x^3 - 5x^2 + x - 3 \end{aligned}$$

$$\begin{aligned} \text{c) } F'(x) &= 4ax^3 - 3bx^2 \\ F(x) &= a \cdot x^4 - b \cdot x^3 + 1 \\ F(x) &= a \cdot x^4 - b \cdot x^3 - 1 \end{aligned}$$