Lösungen

Aufgabe 1:

a) $F(x) = \frac{3}{4}x^4 - 2x^2 + x + c$

$5 = \frac{3}{4} \cdot 2^4 - 2 \cdot 2^2 + 2 + c = 12 - 8 + 2 + c$

$5 = 6 + c \qquad c = -1$

$F(x) = \frac{3}{4}x^4 - 2x^2 + x - 1$

b) $F(x) = \frac{4}{3}x^3 + x^2 - 3x + c$

$4 = \frac{4}{3} \cdot 0^3 + 0^2 - 3 \cdot 0 + c \qquad c = 4$

$F(x) = \frac{4}{3}x^3 + x^2 - 3x + 4$

c) $F(x) = x^5 - x^3 - 2x + c$

$0 = 2^5 - 2^3 - 2 \cdot 2 + c = 32 - 8 - 4 + c$

$c = -20$

$F(x) = x^5 - x^3 - 2x - 20$

Aufgabe 2:

a) $F'(x) = 20x^3 \qquad F(x) = 5x^4 - 8$

$F(x) = 5x^4 + 1$

b) $F'(x) = 12x^2 - 10x + 1$

$F(x) = 4x^3 - 5x^2 + x + 1$

$F(x) = 4x^3 - 5x^2 + x - 3$

c) $F'(x) = 4ax^3 - 3bx^2$

$F(x) = a \cdot x^4 - b \cdot x^3 + 1$

$F(x) = a \cdot x^4 - bx^3 - 1$