

S. 129 Nr. 4 Teilweise als Beispiel

$$f(x) = x^3 + 3x + 2$$

$$\text{i) } f_i(x) = f(x - 1) + 2$$

$$\text{iv) } f_{iv}(x) = x^3 + 3x^2 + 4$$

$$\begin{aligned} \text{v) } f_v(x) &= f_{iv}(x - 2) - 8 = (x - 2)^3 + 3(x - 2)^2 + 4 - 8 \\ &= (x - 2) \cdot (x^2 - 4x + 4) + 3 \cdot (x^2 - 4x + 4) + 4 - 8 \\ &= x^3 - 4x^2 + 4x - 2x^2 + 8x - 8 + 3x^2 - 12x + 12 + 4 - 8 \\ &= x^3 - 3x^2 + 0 \cdot x + 0 = x^3 - 3x^2 \end{aligned}$$

S. 135 Nr. 5 c)

$$\begin{aligned} r(x) &= 4 \cdot f(x - 2) + 1 = 4 \cdot (x - 2)^2 + 1 = 4 \cdot (x^2 - 4x + 4) + 1 \\ &= 4x^2 - 16x + 16 + 1 = 4x^2 - 16x + 17 \\ r(x) &= f(2(x - 2)) + 1 \end{aligned}$$