

**Aufgabe 1**

$$\begin{array}{c} f(4) \\ \downarrow \\ 2 + f(4) \\ \downarrow \\ 2 + (2 + f(2)) \\ \downarrow \\ 2 + (2 + (2 + f(1))) \\ \downarrow \\ 2 + (2 + (2 + (2 + f(0)))) \\ \downarrow \\ 2 + (2 + (2 + (2 + 3))) \\ \downarrow \\ 2 + (2 + (2 + 5)) \\ \downarrow \\ 2 + (2 + 7) \\ \downarrow \\ 2 + 9 \\ \downarrow \\ 11 \end{array}$$

**Aufgabe 2**

$$\begin{array}{c} f(5) \\ \downarrow \\ 5 + f(3) \\ \downarrow \\ 5 + (3 + f(1)) \\ \downarrow \\ 5 + (3 + (1 + f(-1))) \\ \downarrow \\ 5 + (3 + (1 + 7)) \\ \downarrow \\ 5 + (3 + 8) \\ \downarrow \\ 5 + 11 \\ \downarrow \\ 16 \end{array}$$

### Aufgabe 3

$$\begin{aligned} & f(5) \\ & \downarrow \\ & f(4) + f(3) \\ & \downarrow \\ & (f(3) + f(2)) + (f(2) + f(1)) \\ & \downarrow \\ & ((f(2) + f(1)) + (f(1) + f(0))) + ((f(1) + f(0)) + 1) \\ & \downarrow \\ & (((f(1) + f(0)) + 1) + (1 + 0)) + ((1 + 0) + 1) \\ & \downarrow \\ & (((1 + 0) + 1) + 1) + (1 + 1) \\ & \downarrow \\ & ((1 + 1) + 1) + 2 \\ & \downarrow \\ & (2 + 1) + 2 \\ & \downarrow \\ & 3 + 2 \\ & \downarrow \\ & 5 \end{aligned}$$

### Aufgabe 4

$$\begin{aligned} & f(7) \\ & \downarrow \\ & 3 \cdot f(5) \\ & \downarrow \\ & 3 \cdot (3 \cdot f(3)) \\ & \downarrow \\ & 3 \cdot (3 \cdot (2 \cdot f(2))) \\ & \downarrow \\ & 3 \cdot (3 \cdot (2 \cdot (2 \cdot f(1)))) \\ & \downarrow \\ & 3 \cdot (3 \cdot (2 \cdot (2 \cdot 5))) \\ & \downarrow \\ & 3 \cdot (3 \cdot (2 \cdot 10)) \\ & \downarrow \\ & 3 \cdot (3 \cdot 20) \\ & \downarrow \\ & 3 \cdot 60 \\ & \downarrow \\ & 180 \end{aligned}$$