3. Dezember - Lösung

$$S_n = 2^0 + 2^1 + 2^2 + \ldots + 2^{n-1} = 2^n - 1$$

Für $n = k$:

$$S_k = 2^0 + 2^1 + 2^2 + \ldots + 2^{k-1} = 2^k - 1$$

$$\begin{aligned} S_{k+1} &= 2^0 + 2^1 + 2^2 + \ldots + 2^{k-1} + 2^k \\ &= (2^k - 1) + 2^k = 2 \cdot 2^k - 1 \\ S_{k+1} &= 2^{k+1} - 1 \end{aligned}$$