Spezielle Reihen

$$\sum_{k=0}^{\infty} aq^k = a + aq + aq^2 + \cdots = \frac{a}{1-q}, \quad |q| < 1$$

$$\sum_{k=1}^{\infty} (-1)^{k-1} \frac{1}{k} = 1 - \frac{1}{2} + \frac{1}{3} - \frac{1}{4} \pm \cdots = \ln 2$$

$$\sum_{k=1}^{\infty} \frac{1}{k^2} = 1 + \frac{1}{2^2} + \frac{1}{3^2} + \cdots = \frac{\pi^2}{6}$$

$$\sum_{k=1}^{\infty} (-1)^{k-1} \frac{1}{k^2} = 1 - \frac{1}{2^2} + \frac{1}{3^2} - \frac{1}{4^2} \pm \cdots = \frac{\pi^2}{12}$$

$$\sum_{k=0}^{\infty} \frac{1}{k!} = 1 + \frac{1}{1!} + \frac{1}{2!} + \frac{1}{3!} + \cdots = \mathrm{e}$$

$$\sum_{k=0}^{\infty} (-1)^k \frac{1}{k!} = 1 - \frac{1}{1!} + \frac{1}{2!} - \frac{1}{3!} \pm \cdots = \frac{1}{\mathrm{e}}$$

$$\sum_{k=1}^{\infty} \frac{1}{k \cdot 2^k} = \frac{1}{2} + \frac{1}{2 \cdot 2^2} + \frac{1}{3 \cdot 2^3} + \cdots = \ln 2$$