Das Summenzeichen

$1+2+3+\ldots+99+100 = 5050$

101

50 Paare $\quad 50 \cdot 101$

$$\sum_{k=1}^{100} k$$

$$\sum_{i=2}^{5} \frac{1}{i} = \frac{1}{2}+\frac{1}{3}+\frac{1}{4}+\frac{1}{5}$$

$$= \frac{30+20+15+12}{60}$$

$$= \frac{77}{60}$$

$$\sum_{j=3}^{7} (j-2)^2 = (3-2)^2+(4-2)^2+(5-2)^2+(6-2)^2+(7-2)^2$$

$$= 1^2+2^2+3^2+4^2+5^2$$

$$= 1+4+9+16+25 = 55$$

$$\sum_{k=1}^{5} k^2 = \sum_{k=0}^{4} (k+1)^2$$

$1,3+2,1+2,9+3,7+4,5$

$=(1,3+0)+(1,3+1\ 0,8)+(1,3+2\cdot 0,8)+(1,3+3\ 0,8)+\ldots$

$$= \sum_{i=0}^{4} (1,3+i\cdot 0,8) \quad \Big| \quad \sum_{i=1}^{5} (i+0,5-i\cdot 0,2)$$

$$\sum_{k=1}^{3} k \cdot n^2 = 1 \cdot n^2 + 2n^2 + 3n^2$$
$$= 6n^2$$

$$\sum_{j=0}^{5} \frac{1}{a} = \frac{1}{a} + \frac{1}{a} + \frac{1}{a} + \frac{1}{a} + \frac{1}{a} + \frac{1}{a} = 6 \cdot \frac{1}{a} = \frac{6}{a}$$

Rechengesetze

$$\sum_{i=1}^{n} (a_i + b_i) = \sum_{i=1}^{n} a_i + \sum_{i=1}^{n} b_i$$

$$\begin{array}{l} a_1 + b_1 \\ + a_2 + b_2 \\ + a_3 + b_3 \\ + \dots \\ + a_n + b_n \end{array}$$

$$\sum_{i=1}^{n} c a_i = c \sum_{i=1}^{n} a_i$$

$$ca_1 + ca_2 + ca_3 = c(a_1 + a_2 + a_3)$$

$$\begin{array}{r} 12 \\ 83 \\ \hline 95 \end{array}$$

$$\sum_{i=1}^{n} i = 1 + 2 + 3 + \dots + (n-2) + (n-1) + n$$
$$= \frac{n(n+1)}{2}$$

$$\sum_{k=1}^{n} \frac{1}{k^2+1} = \frac{1}{2} + \frac{1}{5} + \frac{1}{10} + \dots + \frac{1}{(n-1)^2+1} + \frac{1}{n^2+1}$$

$$\sum_{k=1}^{n} (k+1)^2 = \sum_{k=1}^{n} (k^2 + 2k + 1)$$
$$= \sum_{k=1}^{n} k^2 + 2\sum_{k=1}^{n} k + \sum_{i=1}^{n} 1 \cdot n$$