Faulhaber Formeln

$$\sum_{j=1}^{n} j = \frac{n(n+1)}{2}$$

$$\sum_{j=1}^{n} j^2 = \frac{n(n+1)(2n+1)}{6}$$

$$\sum_{j=1}^{n} j^3 = \frac{n^2(n+1)^2}{4}$$

$$\sum_{j=1}^{n} j^4 = \frac{n(n+1)(2n+1)(3n^2+3n-1)}{30}$$

$$\sum_{j=1}^{n} j^5 = \frac{n^2(n+1)^2(2n^2+2n)}{12}$$

$$\sum_{j=1}^{n} j^6 = \frac{n(n+1)(2n+1)(3n^4+6n^3-3n+1)}{42}$$

$$\sum_{j=1}^{n} j^7 = \frac{n^2(n+1)^2(3n^4+6n^3-n^2-4n+2)}{24}$$