Fórmulas matemáticas útiles

Progresiones aritméticas

$$a_{i+1} = a_i + d$$

$$\sum_{i=1}^{n} a_i = \frac{1}{2} n (a_1 + a_n)$$

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

Progresiones geométricas

$$a_{i+1} = r\, a_i$$

$$\sum_{i=1}^{n} a_i = \frac{a_1 (r^{n+1} - 1)}{r - 1}$$

$$\sum_{i=1}^{n} b^i = \frac{b^{n+1} - b}{b - 1}$$

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Sumatorios

$$\sum_{i=1}^{n} a = na$$

$$\sum_{i=1}^{n} af(i) = a\sum_{i=1}^{n} f(i)$$

$$\sum(a+b) = \sum a + \sum b$$

$$\sum_{i}\sum_{j} a_i b_j = \sum_{i} a_i \sum_{j} b_j$$

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

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

$$\sum_{i=1}^{n} i^3 = \left[\frac{1}{2}n(n+1)\right]^2$$

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

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Potencias

$$x^{y+z} = x^y \cdot x^z$$

$$x^{y-z} = x^y / x^z$$

$$x^{y \cdot z} = (x^y)^z = (x^z)^y$$

Logaritmos

$$\log_a(n) = \frac{\log_b(n)}{\log_b(a)}$$

$$\log_a(n\,m) = \log_a(n) + \log_a(m)$$

$$\log_a(n/m) = \log_a(n) - \log_a(m)$$

$$\log_a(n^p) = p \log_a(n)$$

$$n^{\log_a(m)} = m^{\log_a(n)}$$