- Fórmulas útiles para resolver recurrencias:

$$\boxed{\log_a(x^y) = y \cdot \log_a(x)}$$

$$\boxed{x^{\log_a(y)} = y^{\log_a(x)}}$$

$$\boxed{(x^y)^z = (x^z)^y} \xrightarrow{\text{ojo}} \boxed{x^{(y^z)} \neq x^{(z^y)}}$$

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

$\Downarrow$

se puede cambiar de base considerando una constante multiplicativa, $\log_b(a)$

$$\log_a(x \cdot y) = \log_a(x) + \log_a(y)$$

$$\log_a\left(\frac{x}{y}\right) = \log_a(x) - \log_a(y)$$

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

$$x^{(y-z)} = \frac{x^y}{x^z}$$

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

- Fórmulas útiles para bucles anidados:

Progresión aritmética

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

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

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

Progresión geométrica

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

$$\sum_{i=1}^{n} a_i = \frac{a_{n+1} - a_1}{d-1}$$

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

$$\sum a+b = \sum a + \sum b$$

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

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

$$\boxed{\sum_{i=p}^{q} i = \frac{(q+p)(q-p+1)}{2}}$$

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

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

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