Progresii

1. Fie progresia aritmetica $a_1, a_2, \ldots, a_n, \ldots \quad , n \in \mathbf{N}$

$$d = a_n - a_{n-1}; \quad a_n = a_1 + d(n-1);$$
$$S_n = \frac{a_1 + a_n}{2} n; \quad S_n = \frac{2a_1 + d(n-1)}{2}$$

unde d - ratia progresiei, a_n - termenul de rang n, S_n - suma primilor n termeni ai progresiei.

2. Fie progresia geometrica $b_1, b_2, \ldots, b_n, \ldots \quad , n \in \mathbf{N}$

$$q = \frac{b_n}{b_{n-1}};$$
$$b_n = b_1 q^{n-1};$$
$$S_n = \frac{a_n q - a_1}{q-1} \quad \left(S_n = \frac{a_1 - a_n q}{1-q} \right);$$
$$S_n = \frac{a_1(q^n - 1)}{q-1} \quad \left(S_n = \frac{a_1(1-q)^n}{1-q} \right)$$

unde q - ratia progresiei, S_n - suma primilor n termeni ai progresiei.

Suma progresiei geometrice infinit descrescatoare este

$$S = \frac{b_1}{1-q}$$

unde $|q| < 1$.