

Arithmetic Formulas:

Explicit: $a_n = dn + a_0$ or $a_n = d(n-1) + a_1$

Recursive: $a_{n+1} = a_n + d$

Sum of finite Arithmetic Sequence:

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

Geometric Formulas:

Explicit: $a_n = a_1 r^{n-1}$ or $a_n = a_0 r^n$

Recursive: $a_{n+1} = ra_n$

Sum of finite geometric sequence:

$$S_n = \sum_{i=1}^n a_1 r^{i-1} = a_1 \left(\frac{1-r^n}{1-r} \right)$$

Sum of infinite geometric series:

$$S = \sum_{i=0}^{\infty} a_1 r^i = \frac{a_1}{1-r} \quad (\text{Remember!! } |r| < 1)$$