

Useful Formulas

Arithmetic Sequences:

Explicit Formula: $a_n = a_1 + d(n - 1)$

Recursive Formula: $a_1 = \#, \quad a_n = a_{n-1} + d$

Geometric Sequences:

Explicit Formula: $a_n = a_1 \cdot r^{n-1}$

Recursive Formula: $a_1 = \#, \quad a_n = a_{n-1} \cdot r$

Arithmetic Series:

Partial Sum (finite): $S_n = \frac{n}{2}(a_1 + a_n)$

Infinite series: $S_n = \text{NO SUM}$

Geometric Series:

Partial Sum (finite): $S_n = \frac{a_1 - a_n \cdot r}{1 - r}$ or $S_n = \frac{a_1(1 - r^n)}{1 - r}$

Infinite Series: $S_n = \text{NO SUM} \quad |r| \geq 1$

$$S_n = \frac{a_1}{1 - r} \quad |r| < 1$$