## Sum of Geometric Series

Let $(a_i)_{i \geq 0}$ be a geometric sequence with common ratio $r \neq 1$. Then for some $n \in \mathbb{N}$,

$$\sum_{i=0}^{n} a_i = \frac{a_0(1 - r^{n+1})}{1 - r}.$$

*Proof.* Real.Geometric.sum_recursive_closed

□