Summations

Gauss’ Summation
\[ \sum_{i=0}^{n} i = \frac{n(n + 1)}{2}. \]

Infinite Geometric Series
\[ \sum_{i=0}^{\infty} x^i = \frac{1}{1 - x}. \]

Finite Geometric Series
\[ \sum_{i=0}^{n} x^i = \frac{1 - x^{n+1}}{1 - x}. \]

A few more useful formulas, more can be found on the slides from lecture 2

logs

\[ x^{\log_x n} = n \]

\[ a^{\log_x n} = n^{\log_x a} \]