

Exam 1 Formula Cheatsheet

Summations

$$\sum_{i=0}^n i = 1 + 2 + \dots + n = \frac{n(n+1)}{2}$$

$$\sum_{i=0}^n i^2 = 1^2 + 2^2 + \dots + n^2 = \frac{n(n+1)(2n+1)}{6}$$

$$\sum_{i=0}^n i^3 = 1^3 + 2^3 + \dots + n^3 = \frac{n^2(n+1)^2}{4}$$

$$\sum_{i=0}^n c^i = 1 + c + c^2 + \dots + c^n = \frac{c^{n+1} - 1}{c - 1}, \text{ when } c \neq 0, c \neq 1$$

$$\sum_{i=0}^{\infty} c^i = 1 + c + c^2 + \dots = \frac{1}{1 - c}, \text{ when } c \neq 0, |c| < 1$$

Logarithms

$$\log_a 1 = 0$$

$$\log(ab) = \log a + \log b$$

$$\log_a a = 1$$

$$\log\left(\frac{a}{b}\right) = \log a - \log b$$

$$\frac{\log_c a}{\log_c b} = \log_b a$$

$$\log a^b = b \log a$$

$$\frac{1}{\log_a b} = \log_b a$$

$$a^{\log_b x} = x^{\log_b a}$$