

CSE 373 19 WI Midterm Mathematical Identities

<p>Log of a product</p> $\log_b(x \cdot y) = \log_b(x) + \log_b(y)$ <p>Log of a fraction</p> $\log_b\left(\frac{x}{y}\right) = \log_b(x) - \log_b(y)$ <p>Log of a power</p> $\log_b(x^y) = y \cdot \log_b(x)$ <p>Power of a log</p> $x^{\log_b(y)} = y^{\log_b(x)}$ <p>Change of base</p> $\log_b(x) = \frac{\log_d(x)}{\log_d(b)}$ <p>Power Rules</p> $(a^b)^c = a^{(b \cdot c)}$ $a^b \cdot a^c = a^{(b+c)}$	<p>Splitting a sum</p> $\sum_{i=a}^b (x + y) = \sum_{i=a}^b x + \sum_{i=a}^b y$ <p>Adjusting summation bounds</p> $\sum_{i=a}^b f(x) = \sum_{i=0}^b f(x) - \sum_{i=0}^{a-1} f(x)$ <p>Factoring out a constant</p> $\sum_{i=a}^b cf(i) = c \sum_{i=a}^b f(i)$ <p>Summation of a constant</p> $\sum_{i=0}^{n-1} c = cn$ <p>Sum of squares</p> $\sum_{i=0}^{n-1} i^2 = \frac{n(n-1)(2n-1)}{6}$ <p>Gauss's identity</p> $\sum_{i=0}^{n-1} i = \frac{n(n-1)}{2}$ <p>Finite geometric series</p> $\sum_{i=0}^{n-1} x^i = \frac{x^n - 1}{x - 1}$
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