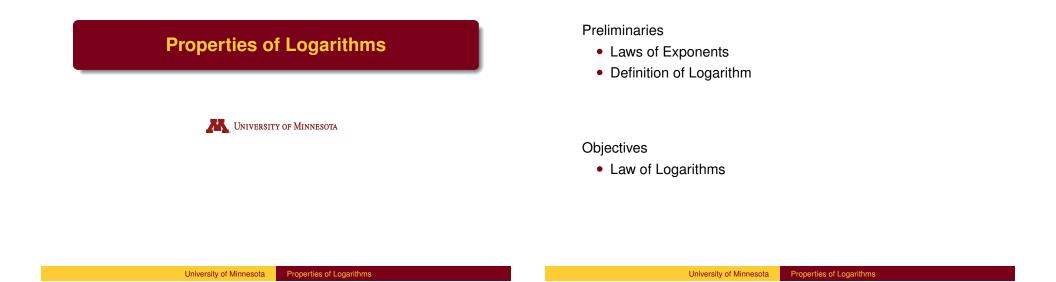
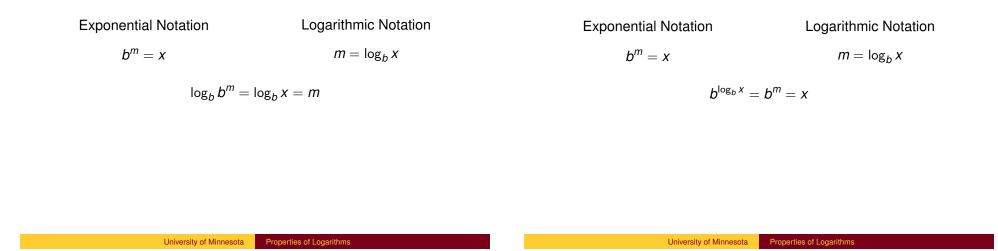
Preliminaries and Objectives



Zero Exponents

Exponent is 1

Exponential Notation	Logarithmic Notation	Exponential Notation	Logarithmic Notation
$b^m = x$	$m = \log_b x$	$b^m = x$	$m = \log_b x$
$b^0 = 1$	$0 = \log_b 1$	$b^1 = b$	$1 = \log_b b$



Negative Exponents = Reciprocals

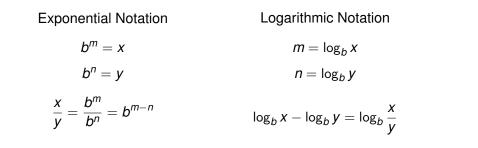
Adding Exponents = Multiply Numbers

Exponential Notation	Logarithmic Notation	Exponential Notation	Logarithmic Notation
$b^{m} = x$ $\frac{1}{x} = \frac{1}{b^{m}} = b^{-m}$	$m = \log_b x$ $-\log_b x = \log_b \frac{1}{x}$	$b^m = x$	$m = \log_b x$
		$b^n = y$	$n = \log_b y$
		$xy = b^m \cdot b^n = b^{m+n}$	$\log_b x + \log_b y = \log_b xy$

Subtracting Exponents = Dividing Numbers

Combining Exponents and Logarithms

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Exponential Notation	Logarithmic Notation
$b^m = x$	$m = \log_b x$
$x^n = (b^m)^n = b^{mn} = b^{n \cdot m}$	$\log_b x^n = n \cdot \log_b x$

Properties of Logarithms

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Recap

$b^m = x$ $b^n = y$	$\log_b x = m$ $\log_b y = n$
$\log_b 1 = 0$	$\log_b \frac{1}{x} = -\log_b x$
$\log_b b = 1$	$\log_b xy = \log_b x + \log_b y$
$\log_b b^m = m$	$\log_b \frac{x}{y} = \log_b x - \log_b y$
$b^{\log_b x} = x$	$\log_b x^n = n \cdot \log_b x$