Math 103 Day 22: Exponential Functions and their Derivatives

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Outline

Properties of Exponential Functions

1. If $a > 0$, then $a^{x+y} = a^x a^y$.
2. If $a > 0$, then $a^{x-y} = \frac{a^x}{a^y}$.
3. If $a > 0$, then $(a^x)^y = a^{xy}$.
4. If $a > 0$ and $b > 0$, then $(ab)^x = a^x b^x$
5. If $a > 1$, then $lim_{x \to \infty} a^x = \infty$ and $lim_{x \to -\infty} a^x = 0$.
6. If $0 < a < 1$, then $lim_{x \to \infty} a^x = 0$ and $lim_{x \to -\infty} a^x = \infty$.