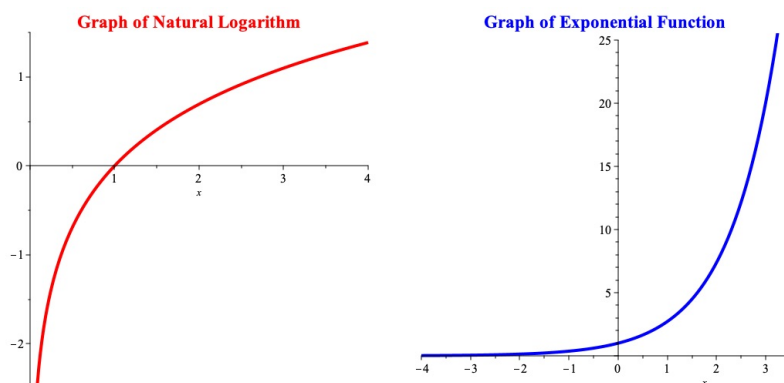


MATH 122: Calculus II

Comparing Natural Logarithm and Natural Exponential Functions

Definition: $\ln(x) = \int_1^x \frac{1}{t} dt$, for $x > 0$

Definition: $\exp x = e^x$ is inverse of $\ln x$



Logarithm	Exponential
$\ln 1 = 0$	$e^0 = 1$
$(\ln x)' = \frac{1}{x}$	$(e^x)' = e^x$
$(\ln f(x))' = f'(x)/f(x)$	$(e^{f(x)})' = e^{f(x)} f'(x)$
$(\ln)'' = -\frac{1}{x^2}$	$(e^x)'' = e^x$
$\ln x^r = r \ln x$	$(e^x)^r = e^{xr}$
$\ln ab = \ln a + \ln b$	$e^a e^b = e^{a+b}$