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	Define other function as its inverse.
	$y=e^{\times} \iff z=\ln y$ .  3 Define other exponentials as $a^c=e^{c\ln a}$ .
	3 Define other exponentials as $a^c = e^{c\ln a}$ . e.g. $2^{\pi} = e^{\pi \ln 2}$
noticing.	2. Derivative of Natural Exponentials. $f(x) = a^{x}$
y = 675	$f'(x) = \lim_{\Delta x \to 0} \frac{f(x + \Delta x) - f(x)}{\Delta x} = \lim_{\Delta x \to 0} \frac{a^{x(a^{\Delta x} - a^{\lambda})}}{\Delta x} = \lim_{\Delta x \to 0} \frac{a^{x(a^{\Delta x} - a^{\lambda})}}{\Delta x}$
clifference $y = \frac{\ln(N+x)}{x}$	when a = e, $\lim_{x \to 0} \frac{e^{\Delta x} - 1}{\Delta x} = 1$
(special limit)	$\frac{d}{dx}e^{x}=e^{x}.$
port	1) lesue 1: Assuming the limit exists.
	1) 20. Issue 2: How to know there is one value of a which.  limit is 1?
	3) Issue 3: How the exponential functions are well-defined
	always?
Use the trick	3. Derivative of Natural Logarithm.  delax = delax.
solve the cleriva- tive for inverse	$=> e^{\ln x} \cdot \frac{d}{dx} \ln x = 1$
function (complex).	$\Rightarrow \frac{d}{dx} \ln x = \frac{1}{x}$
de common trick	4. Derivative of other exponentials. $a^{x} = (e^{\ln a})^{x} = e^{x \cdot \ln a}.$

would its solve the general prishe for all value of a and already band the answer for one works the general cose is tome of the Gorardive of other logarithm.  Logax = $\frac{dx}{dx}$ lina   $\frac{dx}{dx}$ logax	in math: when	
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$log_{0}x = lha$ $log_$	case in terms of the	S. Derivative of other logarithm.
6. Common Method  e.g. $f(x) = (\cos x) \sin x$ .  1) Method /: $ab = e b \ln a$ . $f(x) = (\cos x) \sin x = e \sin x \cdot \ln \cos x$ . $f'(x) = e \sin x \cdot \ln \cos x$ . $(\cos x) \cdot \ln \cos x + \sin x \cdot (\cos x + \sin x)$ .  2) Method 2: Yogarithm Differentiation $\ln f(x) = \ln (\cos x) \sin x$ . $= \frac{dx}{dx} \ln f(x) = \frac{dx}{dx} \sin x \cdot \ln \cos x$ . $\Rightarrow \frac{dx}{dx} \ln f(x) = \frac{dx}{dx} \sin x \cdot \ln \cos x$ . $\Rightarrow \frac{dx}{dx} \ln f(x) = \cos x \cdot \ln \cos x - \frac{\sin^2 x}{\cos x}$ .  7. Proof of the power rule. $\frac{dx}{dx} [x^c] = \frac{dx}{dx} [e^{c \ln x}]$ $= e^{c \ln x} \cdot \frac{dx}{dx} [c \ln x]$ $= \frac{x^c}{a} \cdot \frac{c}{a}$	case that can solve	lus de la laconomiento de laconomiento de la laconomiento de la laconomiento de la laconomiento de la laconomiento de laconomiento de laconomiento de laconomiento de laconomiento de la laconomiento de la laconomiento de laconomiento de la laconomiento de
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