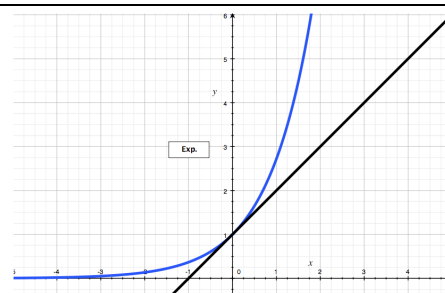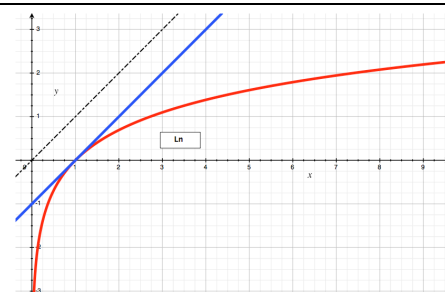# Exponential – Power – Logarithm
Limits and comparison of limits

I - Reminder :

(1) $\lim\limits_{x \to +\infty} Exp(x) = +\infty$	(5) $\lim\limits_{x \to +\infty} \ln(x) = +\infty$	
(2) $\lim\limits_{x \to -\infty} Exp(x) = 0^+$	(6) $\lim\limits_{x \to -\infty} \ln(x) = $ None !	
(3) $\lim\limits_{x \to 0} Exp(x) = 1$	(7) $\lim\limits_{x \to 0^+} \ln(x) = -\infty$	
(4) $\lim\limits_{x \to 0} \dfrac{e^x - 1}{x} = 1$	(8) $\lim\limits_{x \to 0} \dfrac{\ln(1 + x)}{x} = 1$	

II - Comparisons : (n ≥ 2)

(9) $\lim\limits_{x \to +\infty} \dfrac{Exp(x)}{x} = +\infty$	(13) $\lim\limits_{x \to +\infty} \dfrac{\ln(x)}{x} = 0^+$	(17) $\lim\limits_{x \to +\infty} \dfrac{e^x}{\ln x} = +\infty$
(10) $\lim\limits_{x \to +\infty} \dfrac{Exp(x)}{x^n} = +\infty$	(14) $\lim\limits_{x \to +\infty} \dfrac{(\ln(x))^n}{x} = 0^+$	(18) $\lim\limits_{x \to \pm\infty} x.\ln(1 + \dfrac{1}{x}) = 1$
(11) $\lim\limits_{x \to -\infty} x.Exp(x) = 0^-$	(15) $\lim\limits_{x \to 0^+} x.\ln(x) = 0^-$	(19) $\lim\limits_{x \to 1} \dfrac{\ln(x)}{x - 1} = 1$
(12) $\lim\limits_{x \to -\infty} x^n.Exp(x) = 0^{\pm}$	(16) $\lim\limits_{x \to 0^+} x.(\ln(x))^n = 0^-$	(20) $\lim\limits_{n \to +\infty} \left(1 + \dfrac{1}{n}\right)^n = e$

"The Exponential function imposes its limit to the Power"
and *"the Power function imposes its limt to the Logarithm function"*