7.5

Saturday, May 22, 2021 9:52 AM

	Lecture	Discussion
7.5	15, 58, 67	12, 16, 27, 33, 38, 41, 46, 52, 56, 60, 68, 72

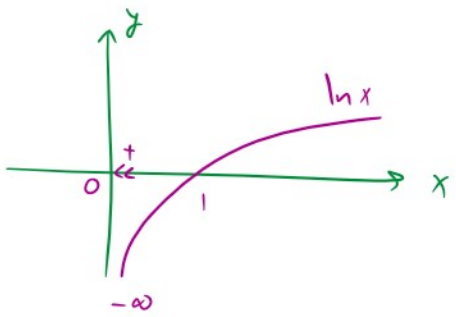
Indeterminate forms: $\frac{0}{0}$, $\frac{\infty}{\infty}$, $\infty \cdot 0$, $\infty - \infty$, 0^0 , 1^∞ , ∞^0

$\lim f(x) = \lim e^{\ln f(x)}$

$\frac{(\ )'}{(\ )'}$

لازم نعمل تبسيط أو إيجاد كتابة أو توضيحات

(33) $\lim_{x \to 0^+} \frac{\ln(x^2+2x)}{\ln x}$ $\frac{\ln 0^+}{\ln 0^+} = \frac{-\infty}{-\infty} = \frac{\infty}{\infty}$



$\lim_{x \to 0^+} \frac{\frac{2x+2}{x^2+2x}}{\frac{1}{x}} = \lim_{x \to 0^+} \frac{2x^2+2x}{x^2+2x}$ $\frac{0}{0}$

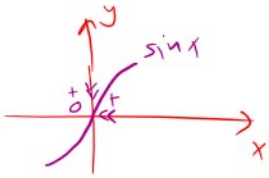
$= \lim_{x \to 0^+} \frac{4x+2}{2x+2} = \frac{0+2}{0+2} = \frac{2}{2} = 1$

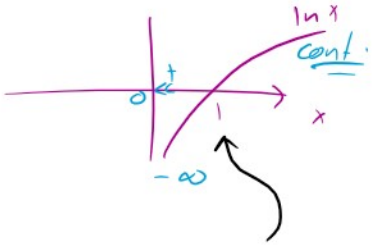
(38) $\lim_{x \to 0^+} (\ln x - \ln \sin x)$

$\ln 0^+ - \ln 0^+$

$-\infty \quad (-) \quad \infty$

$\infty - \infty$





$\lim_{x \to 0^+} \ln \frac{x}{\sin x}$

$\ln\left(\lim_{x \to 0^+} \frac{x}{\sin x}\right) = \ln \lim_{x \to 0^+} \frac{1}{\cos x}$ $\frac{0}{0}$

$= \ln 1 = 0$

$= \ln 1 = 0$

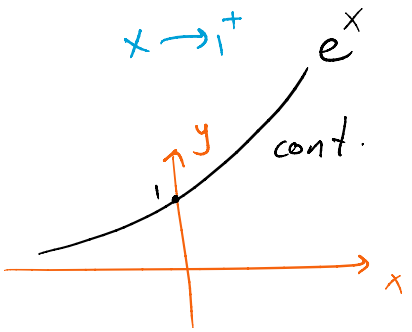
52 $\lim_{x \to 1^+} x^{\frac{1}{x-1}}$ $\quad f(x)$

$\frac{1}{\text{small}^+} = \infty$ $\quad 1^{\infty} = 1$

1,000001 $\rightarrow 1$

$\ln f(x)$ $\quad \ln x^{\frac{1}{x-1}}$ $\quad \frac{1}{x-1} \ln x$

$$\lim_{x \to 1^+} f(x) = \lim_{x \to 1^+} e^{\ln f(x)} = \lim_{x \to 1^+} e^{\frac{1}{x-1}\ln x} = \lim_{x \to 1^+} e^{\frac{\ln x}{x-1}}$$



$\frac{\ln x}{x-1} \rightarrow \frac{0}{0}$

$$= e^{\lim_{x \to 1^+} \frac{\ln x}{x-1}}$$

$$= e^{\lim_{x \to 1^+} \frac{\frac{1}{x}}{1}} = e^{\frac{1}{1}} = e$$