$\frac{\infty}{\infty}$, $\frac{0}{0}$ 以 洛！都TM给我洛！

$x \to \infty$. $\frac{\ln x}{\sqrt{x}}$ $f'(x) = \frac{\frac{1}{x}\cdot\sqrt{x} - \frac{1}{2}\frac{1}{\sqrt{x}}\ln x}{x}$.

$= \frac{\cancel{\frac{1}{\sqrt{x}}}(1-\frac{1}{2}\ln x)}{x^{\frac{3}{2}}}$.

$f''(x) = \frac{-\frac{1}{2}\frac{1}{x} \to 0}{\frac{3}{2}x^{\frac{1}{2}} \to \infty} \Rightarrow 0$.

$x \to \infty$.

1. definations.
2. fundemeneal formula of culculars
3. computations.
4. applications.

3.9. Anti - ~~di~~ deritivies.

Def: A function $F(x)$ is call an anti - deritivies, of $f(x)$ if $F'(x) = f(x)$.

e.g. ~~F(x)~~ $F(x) = \sin x$ $F'(x) = \cos x$.

~~$\cos x$~~ $\sin x$ is the anti-deritive of $\cos x$.

if $F(x)$ is an anti - deritive of $f(x)$., then $F(x) = \int f(x)\,dx$.

How to find an anti-deritive?

1. Guess

$$F(x) \underset{\longleftarrow}{\xrightarrow{F'(x)}} f(x)$$

$$\int f(x)\,dx.$$

$F(x)$ $\Downarrow$ $f(x)$.

1	$x+C$
$\cos x$	$\sin x + C$.
$f(x)$	$F(x)+C$.

$4\sin x + \cancel{\dfrac{2x^5 - \sqrt{x}}{x}}$.

$4\sin x$.

$\cancel{4\cos x} + 2x^4 - \dfrac{1}{\sqrt{x}}$. $\quad x^{-\frac{1}{2}}$.

$-4\cos x + \frac{2}{5}x^5 - 2\sqrt{x}$.