

데이터구조와컴퓨팅 15주차



□ 한 준 희

적분 (Integration) → 부정적분 = $\lim_{\Delta x \rightarrow 0} \frac{\Delta y}{\Delta x}$

$$y = f(x) \xrightarrow{\text{미분}} y' = f'(x) = \frac{dy}{dx} = \frac{df(x)}{dx}$$

$$\xleftarrow{\text{적분}} \int f'(x) dx$$

$$f(x) + C$$

constant (상수)

integral

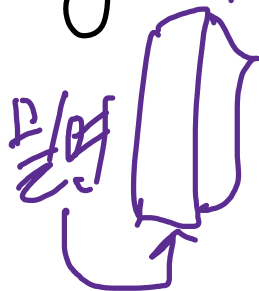
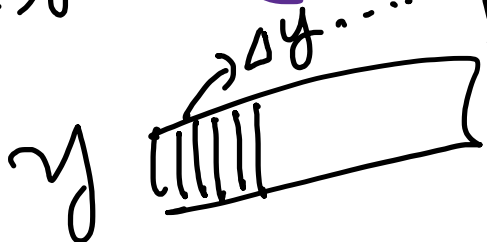
(sum)

$$\lim_{\Delta x \rightarrow 0} \sum \frac{dy}{dx} \Delta x$$

$$\sum \Delta y = y$$

$$\frac{y}{\Delta x}$$

Σ (sigma)



복정

적분 (Integration)

$$y = x \xrightarrow{\text{미분}} y' = 1$$

$$x + C \xleftarrow{\text{적분}} \int 1 dx$$

↪ 상수

$$y = x^2 \xrightarrow{\text{미분}} y' = 2x$$

$$x^2 + C \xleftarrow{\text{적분}}$$

$$\int 2x dx$$

$$\sin x + C = \int \cos x dx$$

$$\begin{aligned} (x+1)' &= 1 \\ (x+2)' &= 1 \\ (x+c)' &= 1 \end{aligned}$$

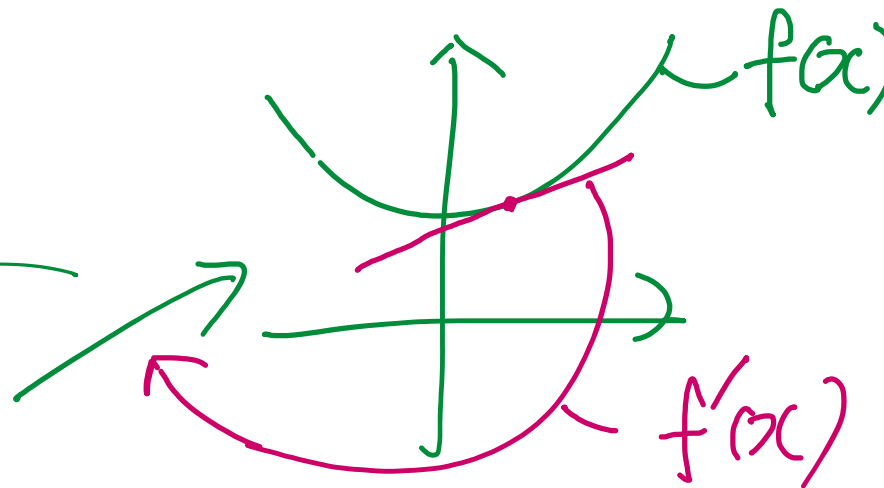
$$y = \sin x \rightarrow y' = \cos x$$

적분 (Integration)

가하역적 의미

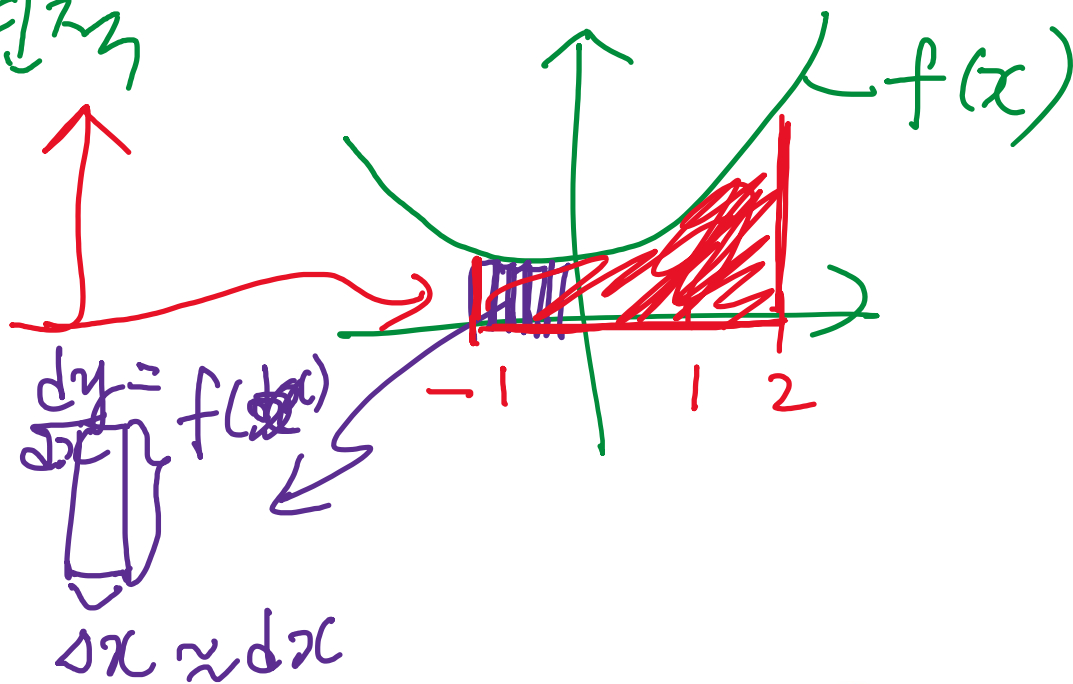
미분 : 기호기

적분 : 변역



$$\int_{-1}^2 f(x) dx$$

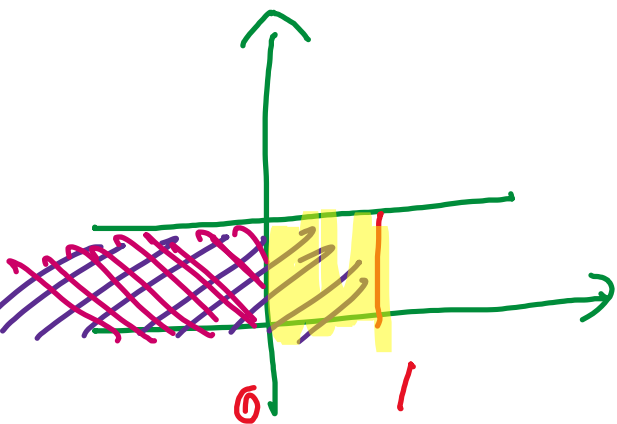
정적분



정적분 (Integration)

$$y = x \xrightarrow{\text{미분}} y' = 1$$

$$x + C \xleftarrow{\text{적분}} \text{상수}$$



$$y' = 1$$

upper limit

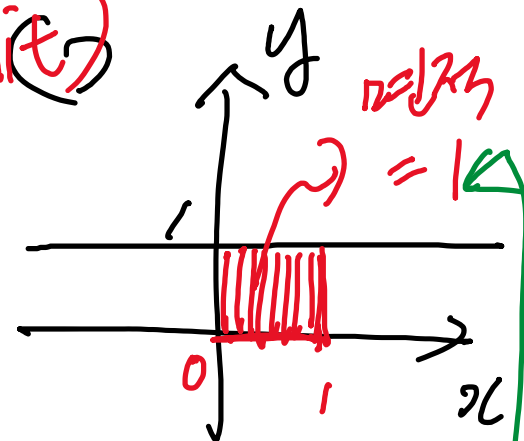
상한

$$\int_0^1 1 dx$$

lower limit

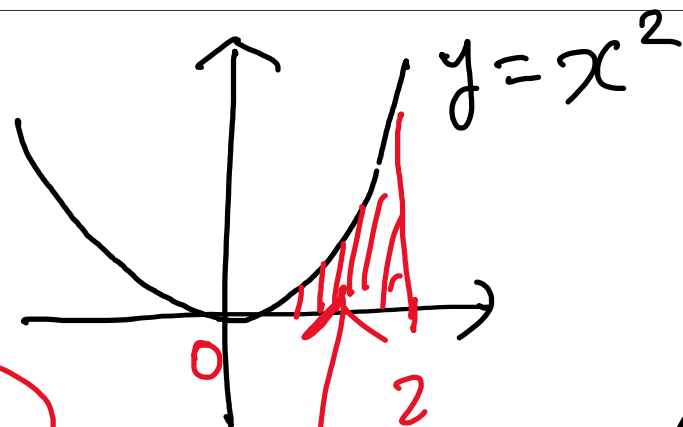
하한

$$[x + C]_0^1 = (1 + C) - (0 + C) = 1 - 0 = 1$$



정적분 (Integration)

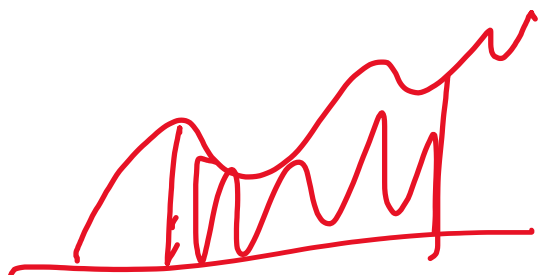
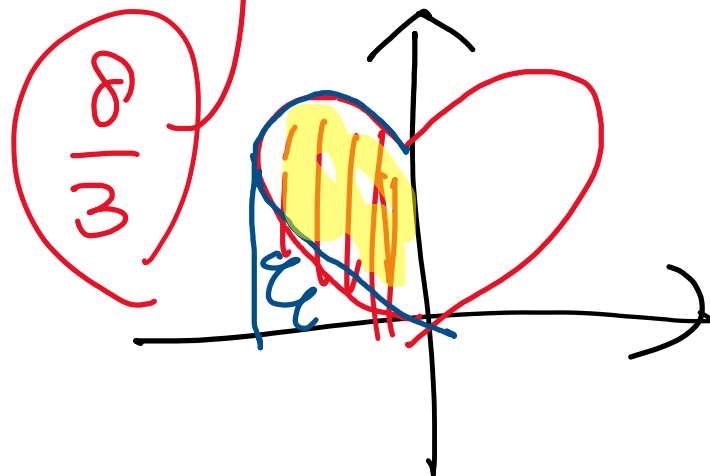
$$y = x^2$$



$$\int_0^2 x^2 dx = \left[\frac{x^3}{3} \right]_0^2$$

$$\left(\frac{x^3}{3} \right)' = x^2$$

$$= \frac{8}{3} - 0 =$$



$$\int_0^2 e^x dx = [e^x]_0^2 = e^2 - e^0 = e^2 - 1$$

$$\int_{-\infty}^0 e^x dx = [e^x]_{-\infty}^0 = e^0 - e^{-\infty} = 1 - 0 = 1$$

$$\int_1^2 \log x dx = [x \log x - x]_1^2$$

$$= (2 \log 2 - 2) - (-1)$$

$$= 2 \log 2 - 1$$

$$(x \log x - x)'$$

$$\log(t) \rightarrow$$

$$\frac{1}{e^\infty} \rightarrow 0$$

한 학기 동안 수고 많았습니다!

