微積分符號表示:

- x(t) 微分後 --> $\frac{dx(t)}{dt}$ 或寫為 dx(t)/dt
- $\frac{dx(t)}{dt}$ 微分後 --> $\frac{d}{dt}\left(\frac{dx(t)}{dt}\right)$ 或寫為 $\frac{d^2x(t)}{dt^2}$
- $\int x(t)dt$ 微分後 --> $\frac{d}{dt}(\int x(t)dt) = x(t)$
- x(t) 積分後 --> $\int x(t)dt$
- $\int x(t)dt$ 積分後 --> $\int(\int x(t)dt)\,dt$
- $\frac{dx(t)}{dt}$ 積分後 --> $\int\left(\frac{dx(t)}{dt}\right)dt = x(t)$

簡單微積分表:

基本微分表	基本積分表
$\frac{d}{dx}kx^n = knx^{n-1}$	$\int kdx = kx + C$
$\frac{d}{dx}a^x = a^x ln a$	$\int ax^n dx = a\frac{1}{n+1}x^{n+1} + C \quad (n \neq -1)$
$\frac{d}{dx}e^x = e^x$	$\int \cos x dx = \sin x + C$
$\frac{d}{dx}ln\,x = \frac{1}{x}$	$\int \sin x dx = -\cos x + C$
$\frac{dy}{dt} = \frac{dy}{dx} \times \frac{dx}{dt}$	$\int e^x dx = e^x + C$
	$\int \frac{k}{x}dx = k\ln\lvert x\rvert + C$

微分範例:

1. $\frac{d}{dt}(3e^{5t}) = 3 \times \frac{d}{dt}(e^{5t}) = 3 \times e^{5t} \times \frac{d}{dt}(5t) = 3 \times e^{5t} \times 5 = 15e^{5t}$

2. $\frac{d}{dt}(6\sin(4t)) = 6 \times \frac{d}{dt}(\sin(4t)) = 6 \times \cos(4t) \times \frac{d}{dt}(4t) = 6 \times \cos(4t) \times 4 = 24\cos(4t)$