Def (Antiderivative): An antiderivative of $f(x)$ is $F(x)$ such that $F'(x) = f(x)$ wherever f is defined.

Theorem (Most general antiderivative): $F'(x) = f(x)$ $\forall x$ in open interval I $\Rightarrow$ every antiderivative G of f has the form $G(x) = F(x) + C$ where C is a constant.

Def: (Indefinite Integral of f): collection of all antiderivatives of a function $f(x)$, denoted $\int f(x)\,dx = F(x) + C$

Antidifferentiation is linear.

$$\int cf(x)\,dx = c\int F(x)\,dx$$

$$\int [f(x) \pm g(x)]\,dx = \int f(x)\,dx \pm \int g(x)\,dx$$