4.9 Antiderivatives

Def A function F is an antiderivative of f if $F'(x) = f(x)$.

Ex. Find $F(x)$ (antiderivative)

(a) $f(x) = 2x$ $\quad F(x) = x^2 + C$

(b) $g(x) = \cos x$ $\quad F(x) = \sin x + C$

(c) $h(x) = \frac{1}{x} + 2e^{2x}$ $\quad H(x) = \ln|x| + e^{2x} + C.$

If F is antiderivative of f then the general antiderivative of f is $F(x) + C$.

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The general antiderivative is called indefinite integral

$$F(x) = \int f(x)\,dx$$

Ex. $\int 2x\,dx = x^2 + C = F(x)$