

Integration rules

Reverse of differentiation

Find the derivative of $f(x) = x^3$ and $f(x) = x^3 + 10$.

Indefinite integral:

$$\int f'(x) dx = f(x) + C$$

C is constant.

Derivative of a constant is 0.

$$\int x^n dx = \frac{x^{n+1}}{n+1} + C$$

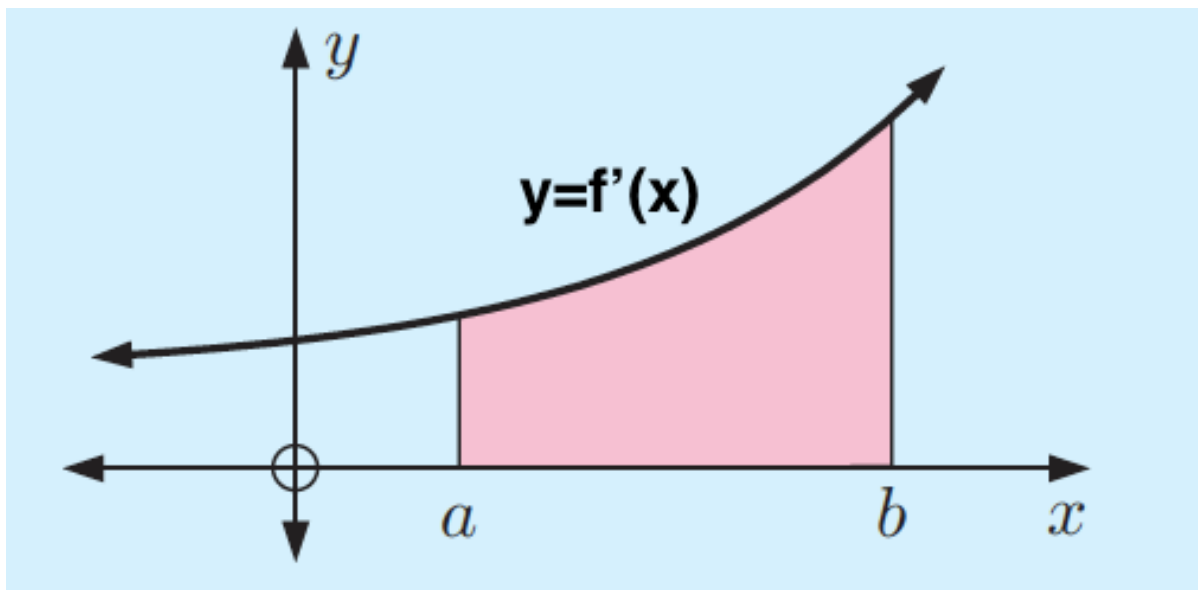
1. Find $\int 3x^2 dx$.

2. Find $\int 5x^6 + 20 dx$.

Definite integral:

$$\int_a^b f'(x) dx$$

Find the area under the curve.



The area below the curve between the line $x = b$ and $x = a$.

$$\begin{aligned} &\int_a^b f'(x) dx \\ &= [f(x)]_a^b \\ &= f(b) - f(a) \end{aligned}$$

