



STANDARD INTEGRALS | KEY POINTS

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

$$\int e^x \, dx = e^x + c$$

$$\int \frac{1}{x} \, dx = \ln x + c$$

$$\int \sin x \, dx = -\cos x + c$$

$$\int \cos x \, dx = \sin x + c$$

$$\int (ax+b)^n \, dx = \frac{1}{an} (ax+b)^{n+1} + c$$

$$\int \frac{f'(x)}{f(x)} \, dx = \ln(f(x)) + c$$

BRACKET TO A POWER | EXAMPLE-PROBLEM PAIR 1

$$\frac{d}{dx} (2x+1)^4$$
$$\int (2x+1)^3 \, dx$$

$$\frac{d}{dx} (3x-1)^6$$
$$\int (3x-1)^5 \, dx$$

BRACKET TO A POWER | EXAMPLE-PROBLEM PAIR 2

$$\int \sqrt{1+3x} \, dx$$

$$\int \sqrt[3]{2+7x} \, dx$$

BRACKET TO A POWER | EXAMPLE-PROBLEM PAIR 3

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$$\int \frac{1}{(2x-8)^4} \, dx$$

$$\int \frac{1}{(5x+6)^3} \, dx$$

BRACKET TO A POWER | EXAMPLE-PROBLEM PAIR 4

$$\int \frac{3}{\sqrt[3]{5-2x}} \, dx$$

$$\int \frac{7}{\sqrt{4-6x}} \, dx$$



TRIGONOMETRIC FUNCTIONS | EXAMPLE-PROBLEM PAIR 5

$$\frac{d}{dx} \sin 3x =$$

$$\int \sin 3x \, dx$$

$$\frac{d}{dx} \cos 5x =$$

$$\int \cos 5x \, dx$$

TRIGONOMETRIC FUNCTIONS | EXAMPLE-PROBLEM PAIR 6

$$\text{Find } \int 3 \cos\left(\frac{1}{2}x + 4\right) dx$$

$$\text{Find } \int 6 \sin\left(-\frac{3}{2}x + 5\right) dx$$

EXPONENTIALS | EXAMPLE-PROBLEM PAIR 7

$$\frac{d}{dx} e^{2x+5}$$

$$\text{Find } \int e^{2x+5} \, dx$$

$$\frac{d}{dx} e^{\frac{x}{4}-3}$$

$$\text{Find } \int e^{\frac{x}{4}-3} \, dx$$

LOGARITHMS | EXAMPLE-PROBLEM PAIR 8

$$\frac{d}{dx} \ln(3x + 2)$$

$$\int \frac{3}{3x + 2} \, dx$$

$$\frac{d}{dx} \ln(2x - 5)$$

$$\int \frac{2}{2x - 5} \, dx$$

LOGARITHMS | EXAMPLE-PROBLEM PAIR 9

$$\int \frac{6}{2x - 1} \, dx$$

$$\int \frac{12}{3x + 7} \, dx$$

LOGARITHMS | EXAMPLE-PROBLEM PAIR 10

$$\int \frac{3}{2x + 5} \, dx$$

$$\int \frac{2}{5x - 4} \, dx$$

LOGARITHMS | EXAMPLE-PROBLEM PAIR 11

$$\int \frac{4x + 3}{4x^2 + 6x + 1} \, dx$$

$$\int \frac{6x + 15}{x^2 + 5x - 3} \, dx$$