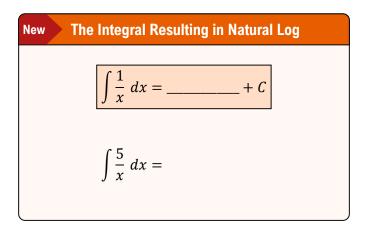
TOPIC: INTEGRALS INVOLVING LOGARITHMIC FUNCTIONS

Integrals Resulting in Natural Logs

• The *derivative* of $\ln x$ is

$$\frac{d}{dx}\ln x = \frac{1}{x}, x > 0$$

 $\frac{d}{dx} \ln x = \frac{1}{x}$, x > 0 & we can _____ this rule to find the *integral* of $\frac{1}{x}$.



• Remember, we can use the power rule to find the integral of x^{-n} when $n \neq 1$.

EXAMPLE

Find the indefinite integral.

$$\int \left(\frac{1}{x^2} + \frac{3}{x}\right) dx$$

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EXAMPLE

Find the indefinite integral.

$$\int \frac{x^3 e^x - 4x^2}{x^3} dx$$

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

PRACTICE

Find the indefinite integral.

$$\int \frac{3 - y^2}{2y} dy$$