

Integration of Bases other than e

I. Integration for Bases other than e .

A. $\int a^x dx =$

B. $\int a^u du =$

Evaluate each indefinite integral.

1. $\int 5^x dx$

2. $\int 2x(3^{x^2}) dx$

3. $\int 4x^2(5^{-x^3}) dx$

4. $\int \frac{7^x}{7^x + 4} dx$

5. $\int \frac{8^{7x}}{1 + 8^{7x}} dx$

6. Solve the differential equation with the given initial condition.

$$\frac{dy}{dx} = 3e^x + 5 \sin x ; \quad f(0) = 2$$

Derivatives of Bases other than e

I. Derivatives for Bases Other than e

Let a be a positive number ($a \neq 1$) and let u be a differential function of x .

A. $\frac{d}{dx}(a^x) =$

B. $\frac{d}{dx}(a^u) =$

C. $\frac{d}{dx}(\log_a x) =$

D. $\frac{d}{dx}(\log_a u) =$

Find the derivative of each function.

1. $f(x) = 5^x$

2. $g(x) = 12^{2-3x}$

3. $y = x^3 3^x$

4. $f(x) = 7^\theta \sin 5\theta$

5. $y = \log_8 x$

6. $y = \log_3 \frac{x^5}{x+4}$

7. Use logarithmic differentiation to find $\frac{dy}{dx}$.

$$y = (2x+1)^x$$