



## Derivative Rules - Natural Exponential Exponent with Coefficient (with Rule) to Derivative

1

Find the derivative  $f'(x)$  using the natural exponential rule and the chain rule.

$$\frac{d}{dx} e^u = e^u \cdot \frac{du}{dx}$$

$$f(x) = 4e^{2x}$$

A  $f'(x) = 8e^{2x}$

B  $f'(x) = 4e^{2x} \cdot (2x)$

C  $f'(x) = 4e^{2x}$

D  $f'(x) = 4(2x)e^{2x-1}$

2

Find the derivative  $f'(x)$  using the natural exponential rule and the chain rule.

$$\frac{d}{dx} e^u = e^u \cdot \frac{du}{dx}$$

$$f(x) = 2e^{5x}$$

A  $f'(x) = 2e^{5x}$

B  $f'(x) = 10e^{5x}$

C  $f'(x) = 2(5x)e^{5x-1}$

D  $f'(x) = 2e^{5x} \cdot (5x)$

3

Find the derivative  $f'(x)$  using the natural exponential rule and the chain rule.

$$\frac{d}{dx} e^u = e^u \cdot \frac{du}{dx}$$

$$f(x) = 5e^{4x}$$

A  $f'(x) = 5e^{4x} \cdot (4x)$

B  $f'(x) = 5e^{4x}$

C  $f'(x) = 5(4x)e^{4x-1}$

D  $f'(x) = 20e^{4x}$

4

Find the derivative  $f'(x)$  using the natural exponential rule and the chain rule.

$$\frac{d}{dx} e^u = e^u \cdot \frac{du}{dx}$$

$$f(x) = 2e^{\frac{2}{3}\pi x}$$

A  $f'(x) = 2e^{\frac{2}{3}\pi x} \cdot (\frac{2}{3}\pi x)$

B  $f'(x) = 2(\frac{2}{3}\pi x)e^{\frac{2}{3}\pi x-1}$

C  $f'(x) = 2e^{\frac{2}{3}\pi x}$

D  $f'(x) = \frac{4}{3}\pi e^{\frac{2}{3}\pi x}$

5

Find the derivative  $f'(x)$  using the natural exponential rule and the chain rule.

$$\frac{d}{dx} e^u = e^u \cdot \frac{du}{dx}$$

$$f(x) = e^{5x}$$

A  $f'(x) = 5e^{5x}$

B  $f'(x) = e^{5x} \cdot (5x)$

C  $f'(x) = e^{5x}$

D  $f'(x) = (5x)e^{5x-1}$

6

Find the derivative  $f'(x)$  using the natural exponential rule and the chain rule.

$$\frac{d}{dx} e^u = e^u \cdot \frac{du}{dx}$$

$$f(x) = 2e^{4x}$$

A  $f'(x) = 2(4x)e^{4x-1}$

B  $f'(x) = 2e^{4x}$

C  $f'(x) = 8e^{4x}$

D  $f'(x) = 2e^{4x} \cdot (4x)$

7

Find the derivative  $f'(x)$  using the natural exponential rule and the chain rule.

$$\frac{d}{dx} e^u = e^u \cdot \frac{du}{dx}$$

$$f(x) = 3e^{3x}$$

A  $f'(x) = 3e^{3x}$

B  $f'(x) = 3(3x)e^{3x-1}$

C  $f'(x) = 3e^{3x} \cdot (3x)$

D  $f'(x) = 9e^{3x}$

8

Find the derivative  $f'(x)$  using the natural exponential rule and the chain rule.

$$\frac{d}{dx} e^u = e^u \cdot \frac{du}{dx}$$

$$f(x) = e^{\frac{1}{3}\pi x}$$

A  $f'(x) = (\frac{1}{3}\pi x)e^{\frac{1}{3}\pi x-1}$

B  $f'(x) = \frac{1}{3}\pi e^{\frac{1}{3}\pi x}$

C  $f'(x) = e^{\frac{1}{3}\pi x}$

D  $f'(x) = e^{\frac{1}{3}\pi x} \cdot (\frac{1}{3}\pi x)$