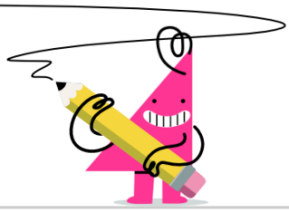
Name



Differentiate exponential functions

1

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

$$\frac{d}{dx}e^u = e^u \cdot \frac{du}{dx}$$
$$[12pt] f(x) = 4e^x$$

A $f'(x) = 4e^x$

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

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

2

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

$$f(x) = 4e^x$$

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

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

C $f'(x) = 4e^x$

3

Find the derivative f'(x).

$$\text{if } f(x) = a\,b^x,\ f'(x) = a\,b^x \ln(b)$$
$$[12pt] f(x) = 2 \cdot 9^x$$

A $f'(x) = 2 \cdot 9^x$

B $f'(x) = 2 \cdot 9^x \cdot \ln(x)$

C $f'(x) = 2 \cdot 9^x \cdot \ln(9)$

D $f'(x) = 2 \cdot x \cdot 9^{x-1}$

4

Find the derivative f'(x).

$$f(x) = 5 \cdot 7^x$$

A $f'(x) = 5 \cdot x \cdot 7^{x-1}$

B $f'(x) = 5 \cdot 7^x$

C $f'(x) = 5 \cdot 7^x \cdot \ln(7)$

D $f'(x) = 5 \cdot 7^x \cdot \ln(x)$

5

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

$$\frac{d}{dx}a^u = a^u \ln a \cdot \frac{du}{dx}$$
$$[12pt] f(x) = 3 \cdot 5^x$$

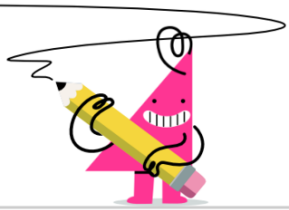
A $f'(x) = 3 \cdot 5^x \ln 5$

B $f'(x) = 3 \cdot 5^x$

C $f'(x) = 3 \cdot 5^x \ln 5 \cdot (x)$

D $f'(x) = 3(x) \cdot 5^{x-1}$

Name



Differentiate exponential functions

6

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

$$f(x) = 2 \cdot 6^x$$

A $f'(x) = 2 \cdot 6^x$

B $f'(x) = 2 \cdot 6^x \ln 6 \cdot (x)$

C $f'(x) = 2(x) \cdot 6^{x-1}$

D $f'(x) = 2 \cdot 6^x \ln 6$

7

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

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

$$[12pt] f(x) = 5e^{\frac{2}{3}\pi x}$$

A $f'(x) = 5(\frac{2}{3}\pi x)e^{\frac{2}{3}\pi x - 1}$

B $f'(x) = 5e^{\frac{2}{3}\pi x} \cdot (\frac{2}{3}\pi x)$

C $f'(x) = 5e^{\frac{2}{3}\pi x}$

D $f'(x) = \frac{10}{3}\pi e^{\frac{2}{3}\pi x}$

8

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

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

$$[12pt] f(x) = 3 \cdot 4^{3x}$$

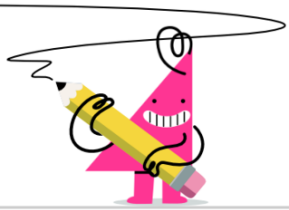
A $f'(x) = 9 \cdot 4^{3x} \ln 4$

B $f'(x) = 3 \cdot 4^{3x} \ln 4 \cdot (3x)$

C $f'(x) = 9 \cdot 4^{3x}$

D $f'(x) = 3 \cdot 4^{3x} \ln 4$

Name



Differentiate exponential functions

9

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

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

$$[12pt] f(x) = e^{x^3}$$

A

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

B

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

C

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

D

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

10

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

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

$$[12pt] f(x) = 5 \cdot 6^{x^{-\frac{1}{2}}}$$

A

$$f'(x) = 5 \cdot 6^{x^{-\frac{1}{2}}} \ln 6$$

B

$$f'(x) = 5 \cdot 6^{x^{-\frac{1}{2}}} \ln 6 \cdot \left(-\frac{1}{2}x^{-\frac{3}{2}}\right)$$

C

$$f'(x) = 5 \cdot 6^{x^{-\frac{1}{2}}} \ln 6 \cdot (x^{-\frac{1}{2}})$$

D

$$f'(x) = 5 \cdot 6^{x^{-\frac{1}{2}}} \cdot \left(-\frac{1}{2}x^{-\frac{3}{2}}\right)$$

11

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

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

$$[12pt] f(x) = 3e^{x^2-x}$$

A

$$f'(x) = 3(x^2-x)e^{x^2-x-1}$$

B

$$f'(x) = 3e^{x^2-x} \cdot (x^2-x)$$

C

$$f'(x) = 3e^{x^2-x}$$

D

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

12

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

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

$$[12pt] f(x) = 2 \cdot 6^{x^2-3x}$$

A

$$f'(x) = 2 \cdot 6^{x^2-3x} \ln 6 \cdot (2x-3)$$

B

$$f'(x) = 2 \cdot 6^{x^2-3x} \cdot (2x-3)$$

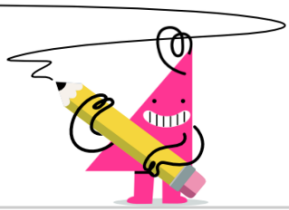
C

$$f'(x) = 2 \cdot 6^{x^2-3x} \ln 6 \cdot (x^2-3x)$$

D

$$f'(x) = 2 \cdot 6^{x^2-3x} \ln 6$$

Name



Differentiate exponential functions

13
Find the derivative f'(x) using the general exponential rule and the chain rule.

$$f(x) = 2 \cdot 4^{x^{-1}}$$

A
$$f'(x) = 2 \cdot 4^{x^{-1}} \ln 4 \cdot (x^{-1})$$

B
$$f'(x) = 2 \cdot 4^{x^{-1}} \ln 4 \cdot (-x^{-2})$$

C
$$f'(x) = 2 \cdot 4^{x^{-1}} \ln 4$$

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

14
Find the derivative f'(x) using the general exponential rule and the chain rule.

$$f(x) = 5^{3x^4-2x}$$

A
$$f'(x) = 5^{3x^4-2x} \cdot (12x^3 - 2)$$

B
$$f'(x) = 5^{3x^4-2x} \ln 5 \cdot (3x^4 - 2x)$$

C
$$f'(x) = 5^{3x^4-2x} \ln 5$$

D
$$f'(x) = 5^{3x^4-2x} \ln 5 \cdot (12x^3 - 2)$$

15
Find the derivative f'(x) using the natural exponential rule and the chain rule.

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

A
$$f'(x) = 3e^{x^{-\frac{1}{2}}} \cdot \left(-\frac{1}{2}x^{-\frac{3}{2}}\right)$$

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

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

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

16
Find the derivative f'(x) using the natural exponential rule and the chain rule.

$$f(x) = 3e^{x^2-2x}$$

A
$$f'(x) = 3e^{x^2-2x}$$

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

C
$$f'(x) = 3(x^2 - 2x)e^{x^2-2x-1}$$

D
$$f'(x) = 3e^{x^2-2x} \cdot (x^2 - 2x)$$