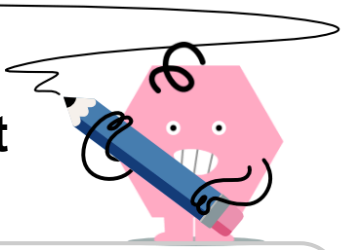
Name

Derivative Rules - Multi Chain Quotient General Exponential (with Rule) to Derivative



1

Find the derivative f'(x) using the quotient, chain, and general exponential rules.

if $y = f(g(x)),\ y' = f'(g(x)) \cdot g'(x)$

$$f(x) = \frac{(x-2)^3}{3 \cdot 4^x}$$

A $f'(x) = \frac{3(x-2)^2(3 \cdot 4^x) + (x-2)^3(3 \cdot 4^x \ln 4)}{(3 \cdot 4^x)^2}$

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

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

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

2

Find the derivative f'(x) using the quotient, chain, and general exponential rules.

$$\frac{d}{dx}a^x = a^x \ln a$$

$$f(x) = \frac{\sqrt[3]{(2x+2)}}{9^x}$$

A $f'(x) = \frac{\frac{2}{3}(2x+2)^{-\frac{2}{3}}(9^x) + \sqrt[3]{(2x+2)}(9^x \ln 9)}{(9^x)^2}$

B $f'(x) = \frac{\sqrt[3]{(2x+2)}(9^x \ln 9) - \frac{2}{3}(2x+2)^{-\frac{2}{3}}(9^x)}{(9^x)^2}$

C $f'(x) = \frac{\frac{2}{3}(2x+2)^{-\frac{2}{3}}(9^x) - \sqrt[3]{(2x+2)}(9^x \ln 9)}{9^x}$

D $f'(x) = \frac{\frac{2}{3}(2x+2)^{-\frac{2}{3}}(9^x) - \sqrt[3]{(2x+2)}(9^x \ln 9)}{(9^x)^2}$

3

Find the derivative f'(x) using the quotient, chain, and general exponential rules.

if $y = f(g(x)),\ y' = f'(g(x)) \cdot g'(x)$

$$f(x) = \frac{(3x+4)^4}{4 \cdot 9^x}$$

A $f'(x) = \frac{(3x+4)^4(4 \cdot 9^x \ln 9) - 12(3x+4)^3(4 \cdot 9^x)}{(4 \cdot 9^x)^2}$

B $f'(x) = \frac{12(3x+4)^3(4 \cdot 9^x) - (3x+4)^4(4 \cdot 9^x \ln 9)}{(4 \cdot 9^x)^2}$

C $f'(x) = \frac{12(3x+4)^3(4 \cdot 9^x) + (3x+4)^4(4 \cdot 9^x \ln 9)}{(4 \cdot 9^x)^2}$

D $f'(x) = \frac{12(3x+4)^3(4 \cdot 9^x) - (3x+4)^4(4 \cdot 9^x \ln 9)}{4 \cdot 9^x}$

4

Find the derivative f'(x) using the quotient, chain, and general exponential rules.

if $h(x) = \frac{f(x)}{g(x)},\ h'(x) = \frac{f'(x)g(x) - f(x)g'(x)}{[g(x)]^2}$

$$f(x) = \frac{\sqrt{(2x+2)}}{4 \cdot 9^x}$$

A $f'(x) = \frac{(2x+2)^{-\frac{1}{2}}(4 \cdot 9^x) - \sqrt{(2x+2)}(4 \cdot 9^x \ln 9)}{(4 \cdot 9^x)^2}$

B $f'(x) = \frac{(2x+2)^{-\frac{1}{2}}(4 \cdot 9^x) - \sqrt{(2x+2)}(4 \cdot 9^x \ln 9)}{4 \cdot 9^x}$

C $f'(x) = \frac{(2x+2)^{-\frac{1}{2}}(4 \cdot 9^x) + \sqrt{(2x+2)}(4 \cdot 9^x \ln 9)}{(4 \cdot 9^x)^2}$

D $f'(x) = \frac{\sqrt{(2x+2)}(4 \cdot 9^x \ln 9) - (2x+2)^{-\frac{1}{2}}(4 \cdot 9^x)}{(4 \cdot 9^x)^2}$

5

Find the derivative f'(x) using the quotient, chain, and general exponential rules.

if $y = f(g(x)),\ y' = f'(g(x)) \cdot g'(x)$

$$f(x) = \frac{(x-2)^2}{4 \cdot 7^x}$$

A $f'(x) = \frac{(x-2)^2(4 \cdot 7^x \ln 7) - 2(x-2)(4 \cdot 7^x)}{(4 \cdot 7^x)^2}$

B $f'(x) = \frac{2(x-2)(4 \cdot 7^x) - (x-2)^2(4 \cdot 7^x \ln 7)}{4 \cdot 7^x}$

C $f'(x) = \frac{2(x-2)(4 \cdot 7^x) - (x-2)^2(4 \cdot 7^x \ln 7)}{(4 \cdot 7^x)^2}$

D $f'(x) = \frac{2(x-2)(4 \cdot 7^x) + (x-2)^2(4 \cdot 7^x \ln 7)}{(4 \cdot 7^x)^2}$

6

Find the derivative f'(x) using the quotient, chain, and general exponential rules.

if $h(x) = \frac{f(x)}{g(x)},\ h'(x) = \frac{f'(x)g(x) - f(x)g'(x)}{[g(x)]^2}$

$$f(x) = \frac{\frac{1}{(2x-2)}}{9^x}$$

A $f'(x) = \frac{-2(2x-2)^{-2}(9^x) + \frac{1}{(2x-2)}(9^x \ln 9)}{(9^x)^2}$

B $f'(x) = \frac{-2(2x-2)^{-2}(9^x) - \frac{1}{(2x-2)}(9^x \ln 9)}{9^x}$

C $f'(x) = \frac{\frac{1}{(2x-2)}(9^x \ln 9) - -2(2x-2)^{-2}(9^x)}{(9^x)^2}$

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

7

Find the derivative f'(x) using the quotient, chain, and general exponential rules.

if $y = f(g(x)),\ y' = f'(g(x)) \cdot g'(x)$

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

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

B $f'(x) = \frac{\frac{1}{2}(x^2-5)^{-\frac{1}{2}}(2x)(3^x) - (x^2-5)^{\frac{1}{2}}(3^x \ln 3)}{(3^x)^2}$

C $f'(x) = \frac{\frac{1}{2}(x^2-5)^{-\frac{1}{2}}(2x)(3^x) + (x^2-5)^{\frac{1}{2}}(3^x \ln 3)}{(3^x)^2}$

D $f'(x) = \frac{(x^2-5)^{\frac{1}{2}}(3^x \ln 3) - \frac{1}{2}(x^2-5)^{-\frac{1}{2}}(2x)(3^x)}{(3^x)^2}$

8

Find the derivative f'(x) using the quotient, chain, and general exponential rules.

if $y = f(g(x)),\ y' = f'(g(x)) \cdot g'(x)$

$$f(x) = \frac{\sqrt{(x-3)}}{5 \cdot 9^x}$$

A $f'(x) = \frac{\frac{1}{2}(x-3)^{-\frac{1}{2}}(5 \cdot 9^x) - \sqrt{(x-3)}(5 \cdot 9^x \ln 9)}{(5 \cdot 9^x)^2}$

B $f'(x) = \frac{\frac{1}{2}(x-3)^{-\frac{1}{2}}(5 \cdot 9^x) + \sqrt{(x-3)}(5 \cdot 9^x \ln 9)}{(5 \cdot 9^x)^2}$

C $f'(x) = \frac{\sqrt{(x-3)}(5 \cdot 9^x \ln 9) - \frac{1}{2}(x-3)^{-\frac{1}{2}}(5 \cdot 9^x)}{(5 \cdot 9^x)^2}$

D $f'(x) = \frac{\frac{1}{2}(x-3)^{-\frac{1}{2}}(5 \cdot 9^x) - \sqrt{(x-3)}(5 \cdot 9^x \ln 9)}{5 \cdot 9^x}$