Name

Derivative Rules - Multi Chain Quotient General Exponential to Derivative

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

$$f(x) = \frac{(3x^2-2)^2}{4 \cdot 6^x}$$

A $f'(x) = \frac{2(3x^2-2)(6x)(4 \cdot 6^x) - (3x^2-2)^2(4 \cdot 6^x \ln 6)}{4 \cdot 6^x}$

B $f'(x) = \frac{2(3x^2-2)(6x)(4 \cdot 6^x) + (3x^2-2)^2(4 \cdot 6^x \ln 6)}{(4 \cdot 6^x)^2}$

C $f'(x) = \frac{(3x^2-2)^2(4 \cdot 6^x \ln 6) - 2(3x^2-2)(6x)(4 \cdot 6^x)}{(4 \cdot 6^x)^2}$

D $f'(x) = \frac{2(3x^2-2)(6x)(4 \cdot 6^x) - (3x^2-2)^2(4 \cdot 6^x \ln 6)}{(4 \cdot 6^x)^2}$

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

$$f(x) = \frac{1}{\frac{(x+4)^2}{5 \cdot 8^x}}$$

A $f'(x) = \frac{\frac{1}{(x+4)^2}(5 \cdot 8^x \ln 8) - -2(x+4)^{-3}(5 \cdot 8^x)}{(5 \cdot 8^x)^2}$

B $f'(x) = \frac{-2(x+4)^{-3}(5 \cdot 8^x) - \frac{1}{(x+4)^2}(5 \cdot 8^x \ln 8)}{5 \cdot 8^x}$

C $f'(x) = \frac{-2(x+4)^{-3}(5 \cdot 8^x) + \frac{1}{(x+4)^2}(5 \cdot 8^x \ln 8)}{(5 \cdot 8^x)^2}$

D $f'(x) = \frac{-2(x+4)^{-3}(5 \cdot 8^x) - \frac{1}{(x+4)^2}(5 \cdot 8^x \ln 8)}{(5 \cdot 8^x)^2}$

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

$$f(x) = \frac{(2x^2-2)^{\frac{1}{2}}}{3 \cdot 8^x}$$

A $f'(x) = \frac{\frac{1}{2}(2x^2-2)^{-\frac{1}{2}}(4x)(3 \cdot 8^x) + (2x^2-2)^{\frac{1}{2}}(3 \cdot 8^x \ln 8)}{(3 \cdot 8^x)^2}$

B $f'(x) = \frac{\frac{1}{2}(2x^2-2)^{-\frac{1}{2}}(4x)(3 \cdot 8^x) - (2x^2-2)^{\frac{1}{2}}(3 \cdot 8^x \ln 8)}{3 \cdot 8^x}$

C $f'(x) = \frac{\frac{1}{2}(2x^2-2)^{-\frac{1}{2}}(4x)(3 \cdot 8^x) - (2x^2-2)^{\frac{1}{2}}(3 \cdot 8^x \ln 8)}{(3 \cdot 8^x)^2}$

D $f'(x) = \frac{(2x^2-2)^{\frac{1}{2}}(3 \cdot 8^x \ln 8) - \frac{1}{2}(2x^2-2)^{-\frac{1}{2}}(4x)(3 \cdot 8^x)}{(3 \cdot 8^x)^2}$

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

$$f(x) = \frac{(3x+4)^{-1}}{4^x}$$

A $f'(x) = \frac{(3x+4)^{-1}(4^x \ln 4) - -3(3x+4)^{-2}(4^x)}{(4^x)^2}$

B $f'(x) = \frac{-3(3x+4)^{-2}(4^x) - (3x+4)^{-1}(4^x \ln 4)}{(4^x)^2}$

C $f'(x) = \frac{-3(3x+4)^{-2}(4^x) + (3x+4)^{-1}(4^x \ln 4)}{(4^x)^2}$

D $f'(x) = \frac{-3(3x+4)^{-2}(4^x) - (3x+4)^{-1}(4^x \ln 4)}{4^x}$

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

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

A $f'(x) = \frac{\frac{1}{2}(2x^2+3)^{-\frac{1}{2}}(4x)(5 \cdot 2^x) + (2x^2+3)^{\frac{1}{2}}(5 \cdot 2^x \ln 2)}{(5 \cdot 2^x)^2}$

B $f'(x) = \frac{\frac{1}{2}(2x^2+3)^{-\frac{1}{2}}(4x)(5 \cdot 2^x) - (2x^2+3)^{\frac{1}{2}}(5 \cdot 2^x \ln 2)}{5 \cdot 2^x}$

C $f'(x) = \frac{\frac{1}{2}(2x^2+3)^{-\frac{1}{2}}(4x)(5 \cdot 2^x) - (2x^2+3)^{\frac{1}{2}}(5 \cdot 2^x \ln 2)}{(5 \cdot 2^x)^2}$

D $f'(x) = \frac{(2x^2+3)^{\frac{1}{2}}(5 \cdot 2^x \ln 2) - \frac{1}{2}(2x^2+3)^{-\frac{1}{2}}(4x)(5 \cdot 2^x)}{(5 \cdot 2^x)^2}$

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

$$f(x) = \frac{(3x+4)^{\frac{1}{3}}}{5 \cdot 7^x}$$

A $f'(x) = \frac{(3x+4)^{\frac{1}{3}}(5 \cdot 7^x \ln 7) - (3x+4)^{-\frac{2}{3}}(5 \cdot 7^x)}{(5 \cdot 7^x)^2}$

B $f'(x) = \frac{(3x+4)^{-\frac{2}{3}}(5 \cdot 7^x) - (3x+4)^{\frac{1}{3}}(5 \cdot 7^x \ln 7)}{(5 \cdot 7^x)^2}$

C $f'(x) = \frac{(3x+4)^{-\frac{2}{3}}(5 \cdot 7^x) - (3x+4)^{\frac{1}{3}}(5 \cdot 7^x \ln 7)}{5 \cdot 7^x}$

D $f'(x) = \frac{(3x+4)^{-\frac{2}{3}}(5 \cdot 7^x) + (3x+4)^{\frac{1}{3}}(5 \cdot 7^x \ln 7)}{(5 \cdot 7^x)^2}$

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

$$f(x) = \frac{(3x-5)^{-1}}{3 \cdot 7^x}$$

A $f'(x) = \frac{-3(3x-5)^{-2}(3 \cdot 7^x) + (3x-5)^{-1}(3 \cdot 7^x \ln 7)}{(3 \cdot 7^x)^2}$

B $f'(x) = \frac{(3x-5)^{-1}(3 \cdot 7^x \ln 7) - -3(3x-5)^{-2}(3 \cdot 7^x)}{(3 \cdot 7^x)^2}$

C $f'(x) = \frac{-3(3x-5)^{-2}(3 \cdot 7^x) - (3x-5)^{-1}(3 \cdot 7^x \ln 7)}{(3 \cdot 7^x)^2}$

D $f'(x) = \frac{-3(3x-5)^{-2}(3 \cdot 7^x) - (3x-5)^{-1}(3 \cdot 7^x \ln 7)}{3 \cdot 7^x}$

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

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

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

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

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

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