Name

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

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

if $h(x) = f(x)\,g(x),\ h^{'}(x) = f^{'}(x)\,g(x) + f(x)\,g^{'}(x)$

$f(x) = \sqrt[3]{(x+4)}\,(7^x)$

A $f^{'}(x) = \sqrt[3]{(x+4)}\,(7^x \ln 7)$	B $f^{'}(x) = \frac{1}{3}(x+4)^{-\frac{2}{3}}\,(7^x)$
C $f^{'}(x) = \frac{1}{3}(x+4)^{-\frac{2}{3}}\,(7^x \ln 7)$	D $f^{'}(x) = \frac{1}{3}(x+4)^{-\frac{2}{3}}\,(7^x) + \sqrt[3]{(x+4)}\,(7^x \ln 7)$

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

if $h(x) = f(x)\,g(x),\ h^{'}(x) = f^{'}(x)\,g(x) + f(x)\,g^{'}(x)$

$f(x) = (2x+4)^{\frac{1}{2}}\,(3 \cdot 2^x)$

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

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

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

$f(x) = \sqrt[3]{(2x+4)}\,(7^x)$

A $f^{'}(x) = \sqrt[3]{(2x+4)}\,(7^x \ln 7)$	B $f^{'}(x) = \frac{2}{3}(2x+4)^{-\frac{2}{3}}\,(7^x)$
C $f^{'}(x) = \frac{2}{3}(2x+4)^{-\frac{2}{3}}\,(7^x \ln 7)$	D $f^{'}(x) = \frac{2}{3}(2x+4)^{-\frac{2}{3}}\,(7^x) + \sqrt[3]{(2x+4)}\,(7^x \ln 7)$

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

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

$f(x) = (x-2)^2\,(5 \cdot 9^x)$

A $f^{'}(x) = (x-2)^2\,(5 \cdot 9^x \ln 9)$	B $f^{'}(x) = 2(x-2)\,(5 \cdot 9^x) + (x-2)^2\,(5 \cdot 9^x \ln 9)$
C $f^{'}(x) = 2(x-2)\,(5 \cdot 9^x \ln 9)$	D $f^{'}(x) = 2(x-2)\,(5 \cdot 9^x)$

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

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

$f(x) = (2x+4)^{-2}\,(9^x)$

A $f^{'}(x) = (2x+4)^{-2}\,(9^x \ln 9)$	B $f^{'}(x) = -4(2x+4)^{-3}\,(9^x) + (2x+4)^{-2}\,(9^x \ln 9)$
C $f^{'}(x) = -4(2x+4)^{-3}\,(9^x)$	D $f^{'}(x) = -4(2x+4)^{-3}\,(9^x \ln 9)$

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

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

$f(x) = (3x^2-5)^3\,(4 \cdot 3^x)$

A $f^{'}(x) = 3(3x^2-5)^2(6x)\,(4 \cdot 3^x)$	B $f^{'}(x) = 3(3x^2-5)^2(6x)\,(4 \cdot 3^x) + (3x^2-5)^3\,(4 \cdot 3^x \ln 3)$
C $f^{'}(x) = (3x^2-5)^3\,(4 \cdot 3^x \ln 3)$	D $f^{'}(x) = 3(3x^2-5)^2(6x)\,(4 \cdot 3^x \ln 3)$

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

if $h(x) = f(x)\,g(x),\ h^{'}(x) = f^{'}(x)\,g(x) + f(x)\,g^{'}(x)$

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

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

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

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

$f(x) = (x-4)^2\,(5 \cdot 6^x)$

A $f^{'}(x) = 2(x-4)\,(5 \cdot 6^x)$	B $f^{'}(x) = (x-4)^2\,(5 \cdot 6^x \ln 6)$
C $f^{'}(x) = 2(x-4)\,(5 \cdot 6^x) + (x-4)^2\,(5 \cdot 6^x \ln 6)$	D $f^{'}(x) = 2(x-4)\,(5 \cdot 6^x \ln 6)$