Name ______________________

Derivative Rules - Multi Chain Natural Exponential Trigonometric (with Rule) to Derivative

1

Find the derivative f'(x) using the chain, natural exponential, and trigonometric rules.

$$\frac{d}{dx}\cos(x) = -\sin(x)$$

$$f(x) = (e^x + 2\cos(x))^{-2}$$

A $f'(x) = (e^x + 2\cos(x))^{-3} \cdot (e^x - 2\sin(x))$	B $f'(x) = -2(e^x + 2\cos(x))^{-3}$
C $f'(x) = -2(e^x + 2\cos(x))^{-3} \cdot (e^x - 2\sin(x))$	D $f'(x) = -2(e^x + 2\cos(x))^{-2} \cdot (e^x - 2\sin(x))$

2

Find the derivative f'(x) using the chain, natural exponential, and trigonometric rules.

$$\frac{d}{dx}\sin(x) = \cos(x)$$

$$f(x) = (2e^x + 2\sin(x))^4$$

A $f'(x) = 4(2e^x + 2\sin(x))^3 \cdot (2e^x + 2\cos(x))$	B $f'(x) = 4(2e^x + 2\sin(x))^3$
C $f'(x) = (2e^x + 2\sin(x))^3 \cdot (2e^x + 2\cos(x))$	D $f'(x) = 4(2e^x + 2\sin(x))^4 \cdot (2e^x + 2\cos(x))$

3

Find the derivative f'(x) using the chain, natural exponential, and trigonometric rules.

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

$$f(x) = (2e^x + 5\cos(x))^{\frac{1}{2}}$$

A $f'(x) = \frac{1}{2}(2e^x + 5\cos(x))^{\frac{1}{2}} \cdot (2e^x - 5\sin(x))$	B $f'(x) = (2e^x + 5\cos(x))^{-\frac{1}{2}} \cdot (2e^x - 5\sin(x))$
C $f'(x) = \frac{1}{2}(2e^x + 5\cos(x))^{-\frac{1}{2}}$	D $f'(x) = \frac{1}{2}(2e^x + 5\cos(x))^{-\frac{1}{2}} \cdot (2e^x - 5\sin(x))$

4

Find the derivative f'(x) using the chain, natural exponential, and trigonometric rules.

$$\frac{d}{dx}e^x = e^x$$

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

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

5

Find the derivative f'(x) using the chain, natural exponential, and trigonometric rules.

$$\frac{d}{dx}\cos(x) = -\sin(x)$$

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

A $f'(x) = \frac{1}{2}(4e^x + 5\cos(x))^{-\frac{1}{2}}$	B $f'(x) = (4e^x + 5\cos(x))^{-\frac{1}{2}} \cdot (4e^x - 5\sin(x))$
C $f'(x) = \frac{1}{2}(4e^x + 5\cos(x))^{\frac{1}{2}} \cdot (4e^x - 5\sin(x))$	D $f'(x) = \frac{1}{2}(4e^x + 5\cos(x))^{-\frac{1}{2}} \cdot (4e^x - 5\sin(x))$

6

Find the derivative f'(x) using the chain, natural exponential, and trigonometric rules.

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

$$f(x) = (5e^x + 2\cos(x))^{-2}$$

A $f'(x) = -2(5e^x + 2\cos(x))^{-2} \cdot (5e^x - 2\sin(x))$	B $f'(x) = -2(5e^x + 2\cos(x))^{-3}$
C $f'(x) = -2(5e^x + 2\cos(x))^{-3} \cdot (5e^x - 2\sin(x))$	D $f'(x) = (5e^x + 2\cos(x))^{-3} \cdot (5e^x - 2\sin(x))$

7

Find the derivative f'(x) using the chain, natural exponential, and trigonometric rules.

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

$$f(x) = (5e^x + 3\sin(x))^3$$

A $f'(x) = (5e^x + 3\sin(x))^2 \cdot (5e^x + 3\cos(x))$	B $f'(x) = 3(5e^x + 3\sin(x))^2$
C $f'(x) = 3(5e^x + 3\sin(x))^2 \cdot (5e^x + 3\cos(x))$	D $f'(x) = 3(5e^x + 3\sin(x))^3 \cdot (5e^x + 3\cos(x))$

8

Find the derivative f'(x) using the chain, natural exponential, and trigonometric rules.

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

$$f(x) = (3e^x + 4\sin(x))^{-2}$$

A $f'(x) = -2(3e^x + 4\sin(x))^{-2} \cdot (3e^x + 4\cos(x))$	B $f'(x) = -2(3e^x + 4\sin(x))^{-3}$
C $f'(x) = -2(3e^x + 4\sin(x))^{-3} \cdot (3e^x + 4\cos(x))$	D $f'(x) = (3e^x + 4\sin(x))^{-3} \cdot (3e^x + 4\cos(x))$