Name ____________________

Derivative Rules - Multi Chain Natural Exponential Trigonometric to Derivative

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

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

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

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

$$f(x) = (3e^x + \cos(x))^4$$

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

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

$$f(x) = (e^x + 5\cos(x))^{\frac{1}{3}}$$

A $f'(x) = \frac{1}{3}(e^x + 5\cos(x))^{-\frac{2}{3}}$	B $f'(x) = (e^x + 5\cos(x))^{-\frac{2}{3}} \cdot (e^x - 5\sin(x))$
C $f'(x) = \frac{1}{3}(e^x + 5\cos(x))^{\frac{1}{3}} \cdot (e^x - 5\sin(x))$	D $f'(x) = \frac{1}{3}(e^x + 5\cos(x))^{-\frac{2}{3}} \cdot (e^x - 5\sin(x))$

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

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

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

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

$$f(x) = \sqrt[3]{(4e^x + 5\sin(x))}$$

A $f'(x) = \frac{1}{3}(4e^x + 5\sin(x))^{-\frac{2}{3}}$	B $f'(x) = \frac{1}{3}(4e^x + 5\sin(x))^{\frac{1}{3}} \cdot (4e^x + 5\cos(x))$
C $f'(x) = (4e^x + 5\sin(x))^{-\frac{2}{3}} \cdot (4e^x + 5\cos(x))$	D $f'(x) = \frac{1}{3}(4e^x + 5\sin(x))^{-\frac{2}{3}} \cdot (4e^x + 5\cos(x))$

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

$$f(x) = \sqrt{(5e^x + 3\cos(x))}$$

A $f'(x) = \frac{1}{2}(5e^x + 3\cos(x))^{-\frac{1}{2}}$	B $f'(x) = (5e^x + 3\cos(x))^{-\frac{1}{2}} \cdot (5e^x - 3\sin(x))$
C $f'(x) = \frac{1}{2}(5e^x + 3\cos(x))^{\frac{1}{2}} \cdot (5e^x - 3\sin(x))$	D $f'(x) = \frac{1}{2}(5e^x + 3\cos(x))^{-\frac{1}{2}} \cdot (5e^x - 3\sin(x))$

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

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

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

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

$$f(x) = (5e^x + 4\sin(x))^{-1}$$

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