Name ______________________

Matarus

Derivative Rules - Quotient Rule Positive Fractional Powers as Radical to Derivative

1

Find the derivative f'(x) using the quotient rule.

$$f(x)=\frac{5\sqrt[3]{x^2}-5}{2x+3}$$

A $f'(x)=\dfrac{(\frac{10}{3}x^{-\frac{1}{3}})(2x+3)-(5x^{\frac{2}{3}}-5)(2)}{(2x+3)^2}$

B $f'(x)=\dfrac{(\frac{10}{3}x^{-\frac{1}{3}})(2x+3)-(5x^{\frac{2}{3}}-5)(2)}{(2x+3)}$

C $f'(x)=\dfrac{(5x^{\frac{2}{3}}-5)(2)-(\frac{10}{3}x^{-\frac{1}{3}})(2x+3)}{(2x+3)^2}$

D $f'(x)=\dfrac{(\frac{10}{3}x^{-\frac{1}{3}})(2x+3)+(5x^{\frac{2}{3}}-5)(2)}{(2x+3)^2}$

2

Find the derivative f'(x) using the quotient rule.

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

A $f'(x)=\dfrac{(4x^{\frac{1}{3}}+7)(-6x)-(\frac{4}{3}x^{-\frac{2}{3}})(-3x^2)}{(-3x^2)^2}$

B $f'(x)=\dfrac{(\frac{4}{3}x^{-\frac{2}{3}})(-3x^2)-(4x^{\frac{1}{3}}+7)(-6x)}{(-3x^2)}$

C $f'(x)=\dfrac{(\frac{4}{3}x^{-\frac{2}{3}})(-3x^2)+(4x^{\frac{1}{3}}+7)(-6x)}{(-3x^2)^2}$

D $f'(x)=\dfrac{(\frac{4}{3}x^{-\frac{2}{3}})(-3x^2)-(4x^{\frac{1}{3}}+7)(-6x)}{(-3x^2)^2}$

3

Find the derivative f'(x) using the quotient rule.

$$f(x)=\frac{2\sqrt[3]{x^4}-4}{2x^2}$$

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

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

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

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

4

Find the derivative f'(x) using the quotient rule.

$$f(x)=\frac{-4\sqrt[3]{x^2}-4}{-5x}$$

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

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

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

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

5

Find the derivative f'(x) using the quotient rule.

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

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

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

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

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

6

Find the derivative f'(x) using the quotient rule.

$$f(x)=\frac{-2\sqrt{x}-2}{2x^2+6}$$

A $f'(x)=\dfrac{(-x^{-\frac{1}{2}})(2x^2+6)-(-2x^{\frac{1}{2}}-2)(4x)}{(2x^2+6)}$

B $f'(x)=\dfrac{(-x^{-\frac{1}{2}})(2x^2+6)+(-2x^{\frac{1}{2}}-2)(4x)}{(2x^2+6)^2}$

C $f'(x)=\dfrac{(-2x^{\frac{1}{2}}-2)(4x)-(-x^{-\frac{1}{2}})(2x^2+6)}{(2x^2+6)^2}$

D $f'(x)=\dfrac{(-x^{-\frac{1}{2}})(2x^2+6)-(-2x^{\frac{1}{2}}-2)(4x)}{(2x^2+6)^2}$

7

Find the derivative f'(x) using the quotient rule.

$$f(x)=\frac{3\sqrt{x}+6}{-5x+7}$$

A $f'(x)=\dfrac{(\frac{3}{2}x^{-\frac{1}{2}})(-5x+7)-(3x^{\frac{1}{2}}+6)(-5)}{(-5x+7)^2}$

B $f'(x)=\dfrac{(\frac{3}{2}x^{-\frac{1}{2}})(-5x+7)+(3x^{\frac{1}{2}}+6)(-5)}{(-5x+7)^2}$

C $f'(x)=\dfrac{(3x^{\frac{1}{2}}+6)(-5)-(\frac{3}{2}x^{-\frac{1}{2}})(-5x+7)}{(-5x+7)^2}$

D $f'(x)=\dfrac{(\frac{3}{2}x^{-\frac{1}{2}})(-5x+7)-(3x^{\frac{1}{2}}+6)(-5)}{(-5x+7)}$

8

Find the derivative f'(x) using the quotient rule.

$$f(x)=\frac{5\sqrt[3]{x}+3}{5x}$$

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

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

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

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