



Derivative Rules - Quotient Rule Positive Fractional Powers as Radical (with Rule)

to Derivative

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

$$\text{if } h(x) = \frac{f(x)}{g(x)}, h'(x) = \frac{f'(x)g(x) - f(x)g'(x)}{[g(x)]^2}$$

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

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

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

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

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

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

$$\text{if } h(x) = \frac{f(x)}{g(x)}, h'(x) = \frac{f'(x)g(x) - f(x)g'(x)}{[g(x)]^2}$$

$$f(x) = \frac{-2\sqrt{x-2}}{-5x}$$

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

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

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

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

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

$$\text{if } h(x) = \frac{f(x)}{g(x)}, h'(x) = \frac{f'(x)g(x) - f(x)g'(x)}{[g(x)]^2}$$

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

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

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

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

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

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

$$\text{if } h(x) = \frac{f(x)}{g(x)}, h'(x) = \frac{f'(x)g(x) - f(x)g'(x)}{[g(x)]^2}$$

$$f(x) = \frac{5\sqrt[3]{x^2-6}}{2x^2}$$

A $f'(x) = \frac{(\frac{10}{3}x^{-\frac{1}{3}})(2x^2) - (5x^{\frac{2}{3}}-6)(4x)}{(2x^2)^2}$

B $f'(x) = \frac{(5x^{\frac{2}{3}}-6)(4x) - (\frac{10}{3}x^{-\frac{1}{3}})(2x^2)}{(2x^2)^2}$

C $f'(x) = \frac{(\frac{10}{3}x^{-\frac{1}{3}})(2x^2) - (5x^{\frac{2}{3}}-6)(4x)}{(2x^2)^2}$

D $f'(x) = \frac{(\frac{10}{3}x^{-\frac{1}{3}})(2x^2) + (5x^{\frac{2}{3}}-6)(4x)}{(2x^2)^2}$

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

$$\text{if } h(x) = \frac{f(x)}{g(x)}, h'(x) = \frac{f'(x)g(x) - f(x)g'(x)}{[g(x)]^2}$$

$$f(x) = \frac{4\sqrt{x+2}}{5x^2}$$

A $f'(x) = \frac{(2x^{-\frac{1}{2}})(5x^2) - (4x^{\frac{1}{2}}+2)(10x)}{(5x^2)^2}$

B $f'(x) = \frac{(2x^{-\frac{1}{2}})(5x^2) - (4x^{\frac{1}{2}}+2)(10x)}{(5x^2)^2}$

C $f'(x) = \frac{(4x^{\frac{1}{2}}+2)(10x) - (2x^{-\frac{1}{2}})(5x^2)}{(5x^2)^2}$

D $f'(x) = \frac{(2x^{-\frac{1}{2}})(5x^2) + (4x^{\frac{1}{2}}+2)(10x)}{(5x^2)^2}$

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

$$\text{if } h(x) = \frac{f(x)}{g(x)}, h'(x) = \frac{f'(x)g(x) - f(x)g'(x)}{[g(x)]^2}$$

$$f(x) = \frac{4\sqrt[3]{x^2+4}}{-5x-7}$$

A $f'(x) = \frac{(4x^{\frac{2}{3}}+4)(-5) - (\frac{8}{3}x^{\frac{1}{3}})(-5x-7)}{(-5x-7)^2}$

B $f'(x) = \frac{(\frac{8}{3}x^{\frac{1}{3}})(-5x-7) - (4x^{\frac{2}{3}}+4)(-5)}{(-5x-7)^2}$

C $f'(x) = \frac{(\frac{8}{3}x^{\frac{1}{3}})(-5x-7) - (4x^{\frac{2}{3}}+4)(-5)}{(-5x-7)^2}$

D $f'(x) = \frac{(\frac{8}{3}x^{\frac{1}{3}})(-5x-7) + (4x^{\frac{2}{3}}+4)(-5)}{(-5x-7)^2}$

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

$$\text{if } h(x) = \frac{f(x)}{g(x)}, h'(x) = \frac{f'(x)g(x) - f(x)g'(x)}{[g(x)]^2}$$

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

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

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

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

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

$$\text{if } h(x) = \frac{f(x)}{g(x)}, h'(x) = \frac{f'(x)g(x) - f(x)g'(x)}{[g(x)]^2}$$

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

A $f'(x) = \frac{(-5x^{\frac{4}{3}}-2)(6x) - (-\frac{20}{3}x^{\frac{1}{3}})(3x^2-4)}{(3x^2-4)^2}$

B $f'(x) = \frac{(-\frac{20}{3}x^{\frac{1}{3}})(3x^2-4) + (-5x^{\frac{4}{3}}-2)(6x)}{(3x^2-4)^2}$

C $f'(x) = \frac{(-\frac{20}{3}x^{\frac{1}{3}})(3x^2-4) - (-5x^{\frac{4}{3}}-2)(6x)}{(3x^2-4)^2}$

D $f'(x) = \frac{(-\frac{20}{3}x^{\frac{1}{3}})(3x^2-4) - (-5x^{\frac{4}{3}}-2)(6x)}{(3x^2-4)^2}$