



# Derivative Rules - Quotient Rule Negative Powers as Division (with Rule) to Derivative

1

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

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

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

$$A \quad f'(x) = \frac{(-15x^{-4})(4x^2 - 3) - (5x^{-3} - 5)(8x)}{(4x^2 - 3)^2}$$

$$B \quad f'(x) = \frac{(-15x^{-4})(4x^2 - 3) + (5x^{-3} - 5)(8x)}{(4x^2 - 3)^2}$$

$$C \quad f'(x) = \frac{(5x^{-3} - 5)(8x) - (-15x^{-4})(4x^2 - 3)}{(4x^2 - 3)^2}$$

$$D \quad f'(x) = \frac{(-15x^{-4})(4x^2 - 3) - (5x^{-3} - 5)(8x)}{(4x^2 - 3)^2}$$

2

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

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

$$f(x) = \frac{\frac{2}{x^3} - 2}{3x^2}$$

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

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

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

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

3

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

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

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

$$A \quad f'(x) = \frac{(-5x^{-3} + 7)(4x) - (15x^{-4})(2x^2 - 5)}{(2x^2 - 5)^2}$$

$$B \quad f'(x) = \frac{(15x^{-4})(2x^2 - 5) + (-5x^{-3} + 7)(4x)}{(2x^2 - 5)^2}$$

$$C \quad f'(x) = \frac{(15x^{-4})(2x^2 - 5) - (-5x^{-3} + 7)(4x)}{(2x^2 - 5)^2}$$

$$D \quad f'(x) = \frac{(15x^{-4})(2x^2 - 5) - (-5x^{-3} + 7)(4x)}{(2x^2 - 5)^2}$$

4

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

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

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

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

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

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

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

5

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

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

$$f(x) = \frac{-\frac{2}{x^2} + 3}{2x}$$

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

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

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

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

6

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

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

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

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

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

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

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

7

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

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

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

$$A \quad f'(x) = \frac{(-2x^{-3} - 5)(-8x) - (6x^{-4})(-4x^2 + 2)}{(-4x^2 + 2)^2}$$

$$B \quad f'(x) = \frac{(6x^{-4})(-4x^2 + 2) - (-2x^{-3} - 5)(-8x)}{(-4x^2 + 2)^2}$$

$$C \quad f'(x) = \frac{(6x^{-4})(-4x^2 + 2) - (-2x^{-3} - 5)(-8x)}{(-4x^2 + 2)^2}$$

$$D \quad f'(x) = \frac{(6x^{-4})(-4x^2 + 2) + (-2x^{-3} - 5)(-8x)}{(-4x^2 + 2)^2}$$

8

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

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

$$f(x) = \frac{-\frac{2}{x^2} - 7}{3x}$$

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

$$B \quad f'(x) = \frac{(4x^{-3})(3x) - (-2x^{-2} - 7)(3)}{(3x)^2}$$

$$C \quad f'(x) = \frac{(-2x^{-2} - 7)(3) - (4x^{-3})(3x)}{(3x)^2}$$

$$D \quad f'(x) = \frac{(4x^{-3})(3x) - (-2x^{-2} - 7)(3)}{(3x)^2}$$