Name

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

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

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

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

A $f'(x) = \frac{(-3x^{-\frac{3}{2}} - 6)(5) - (\frac{9}{2}x^{-\frac{5}{2}})(5x)}{(5x)^2}$

B $f'(x) = \frac{(\frac{9}{2}x^{-\frac{5}{2}})(5x) - (-3x^{-\frac{3}{2}} - 6)(5)}{(5x)^2}$

C $f'(x) = \frac{(\frac{9}{2}x^{-\frac{5}{2}})(5x) + (-3x^{-\frac{3}{2}} - 6)(5)}{(5x)^2}$

D $f'(x) = \frac{(\frac{9}{2}x^{-\frac{5}{2}})(5x) - (-3x^{-\frac{3}{2}} - 6)(5)}{(5x)}$

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

$f(x) = \frac{-\frac{4}{\sqrt{x}} + 5}{-4x^2 + 6}$

A $f'(x) = \frac{(2x^{-\frac{3}{2}})(-4x^2 + 6) - (-4x^{-\frac{1}{2}} + 5)(-8x)}{(-4x^2 + 6)}$

B $f'(x) = \frac{(2x^{-\frac{3}{2}})(-4x^2 + 6) + (-4x^{-\frac{1}{2}} + 5)(-8x)}{(-4x^2 + 6)^2}$

C $f'(x) = \frac{(-4x^{-\frac{1}{2}} + 5)(-8x) - (2x^{-\frac{3}{2}})(-4x^2 + 6)}{(-4x^2 + 6)^2}$

D $f'(x) = \frac{(2x^{-\frac{3}{2}})(-4x^2 + 6) - (-4x^{-\frac{1}{2}} + 5)(-8x)}{(-4x^2 + 6)^2}$

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

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

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

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

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

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

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