



Derivative Rules - Product Rule Negative Powers as Division to Derivative

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

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

$f^A(x) = (-15x^{-4})(-2x^2 - 5) - (5x^{-3} - 5)(-4x)$	$f^B(x) = (-15x^{-4})(-2x^2 - 5)$
$f^C(x) = (-15x^{-4})(-4x)$	$f^D(x) = (-15x^{-4})(-2x^2 - 5) + (5x^{-3} - 5)(-4x)$

2 Find the derivative $f'(x)$ using the product rule. $f(x) = \left(\frac{5}{x^2} - 2\right)(-4x^2)$

$f^A(x) = (-10x^{-3})(-4x^2) - (5x^{-2} - 2)(-8x)$	$f^B(x) = (-10x^{-3})(-4x^2)$
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$f^C(x) = (-10x^{-3})(-8x)$	$f^D(x) = (-10x^{-3})(-4x^2) + (5x^{-2} - 2)(-8x)$
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3 Find the derivative $f'(x)$ using the product rule. $f(x) = \left(-\frac{2}{x^3} + 2\right)(3x^2)$

$f^A(x) = (6x^{-4})(3x^2) - (-2x^{-3} + 2)(6x)$	$f^B(x) = (6x^{-4})(3x^2) + (-2x^{-3} + 2)(6x)$
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$f^C(x) = (6x^{-4})(6x)$	$f^D(x) = (6x^{-4})(3x^2)$
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4 Find the derivative $f'(x)$ using the product rule.

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

$f^A(x) = (-15x^{-4})(-5x + 2)$	$f^B(x) = (-15x^{-4})(-5x + 2) - (5x^{-3} + 2)(-5)$
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$f^C(x) = (-15x^{-4})(-5)$	$f^D(x) = (-15x^{-4})(-5x + 2) + (5x^{-3} + 2)(-5)$
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5 Find the derivative $f'(x)$ using the product rule.

$$f(x) = \left(-\frac{2}{x^3} - 4\right)(5x^2 + 6)$$

$f^A(x) = (6x^{-4})(5x^2 + 6) - (-2x^{-3} - 4)(10x)$	$f^B(x) = (6x^{-4})(5x^2 + 6) + (-2x^{-3} - 4)(10x)$
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$f^C(x) = (6x^{-4})(10x)$	$f^D(x) = (6x^{-4})(5x^2 + 6)$
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6 Find the derivative $f'(x)$ using the product rule. $f(x) = \left(-\frac{4}{x^3} + 3\right)(2x^2)$

$f^A(x) = (12x^{-4})(2x^2) - (-4x^{-3} + 3)(4x)$	$f^B(x) = (12x^{-4})(4x)$
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$f^C(x) = (12x^{-4})(2x^2)$	$f^D(x) = (12x^{-4})(2x^2) + (-4x^{-3} + 3)(4x)$
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7 Find the derivative $f'(x)$ using the product rule.

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

$f^A(x) = (-6x^{-3})(-3x^2 - 3) - (3x^{-2} + 4)(-6x)$	$f^B(x) = (-6x^{-3})(-6x)$
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$f^C(x) = (-6x^{-3})(-3x^2 - 3)$	$f^D(x) = (-6x^{-3})(-3x^2 - 3) + (3x^{-2} + 4)(-6x)$
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8 Find the derivative $f'(x)$ using the product rule.

$$f(x) = \left(\frac{3}{x^2} + 6\right)(5x^2 + 5)$$

$f^A(x) = (-6x^{-3})(10x)$	$f^B(x) = (-6x^{-3})(5x^2 + 5)$
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$f^C(x) = (-6x^{-3})(5x^2 + 5) - (3x^{-2} + 6)(10x)$	$f^D(x) = (-6x^{-3})(5x^2 + 5) + (3x^{-2} + 6)(10x)$
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