

L4 – The Quotient Rule

Unit 1

MCV4U

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The Quotient Rule:

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

Proof:

Example 1: Find the derivative of each of the following:

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

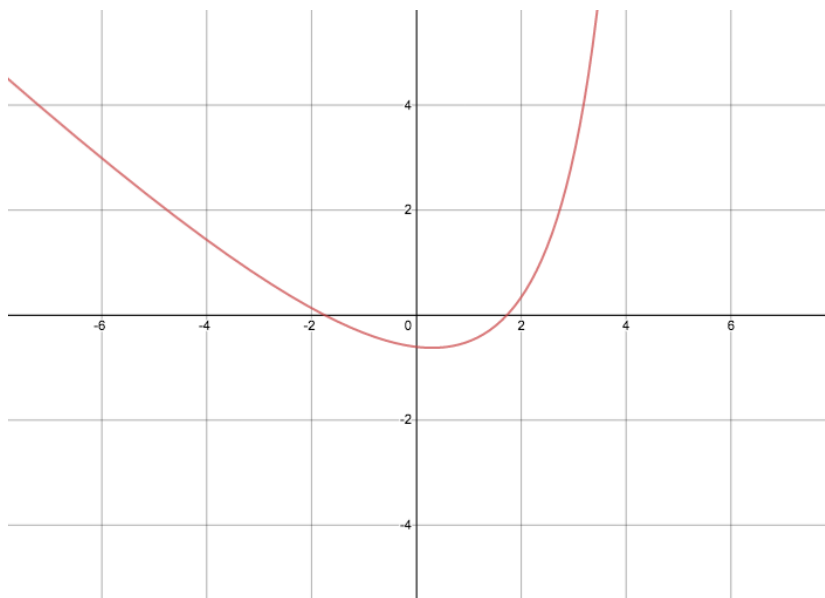
b) $g(x) = \frac{6x-5}{x^3+4}$

c) $h(x) = \frac{2x+8}{\sqrt{x}}$

d) $r(x) = \frac{x+3}{\sqrt{x^2-1}}$

Note: $\frac{d}{dx}\sqrt{x^2-1}$ from part d) uses the 'chain rule'. We will learn this in depth in the next lesson.

Example 2: Determine an equation for the tangent to the curve $y = \frac{x^2-3}{5-x}$ at $x = 2$.



Example 3: Determine the coordinates of each point on the graph of $h(x) = \frac{2x+8}{\sqrt{x}}$ where the tangent is horizontal.

