

The Quotient Rule

If $f(x) = \frac{p(x)}{q(x)}$ then $f'(x) =$

OR
$$\frac{d}{dx} \left(\frac{u}{v} \right) = \frac{\frac{du}{dx}v - u\frac{dv}{dx}}{v^2}$$

Consider the example from last day: $f(x) = \frac{2x-5}{x^2-3x}$. We can use the quotient rule instead of the power rule.

Proof of the Quotient Rule

$$f(x) = \frac{p(x)}{q(x)}$$

Example: Differentiate $y = \frac{2x-3}{4x+1}$

Sometimes the quotient rule is not always the best option for dealing with rational expressions.

Example $y = \frac{-6}{(x+3)^4}$

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

Example $f(x) = \sqrt[3]{\frac{7x+1}{30x-3}}$

Text page 79 #2g, 3d, 4ab, 5h, 6g, 9d, 11c and page 86 #2n, 3dg, 5c