2.3 Quotient Rule

Standard:

MCD1e

Let's consider the function: $\dfrac{f(x)}{g(x)}$.

We want to find the derivative of the function.

$$\left(\dfrac{f}{g}\right)' = \dfrac{g \cdot f' - f \cdot g'}{g^2} \quad \longleftarrow \text{Quotient Rule}$$

[Example 1] $y = \dfrac{2x+5}{3x-2}$. Find y'.

$$y' = \dfrac{(3x-2)(2) - (2x+5)(3)}{(3x-2)^2}$$

$$= \dfrac{(6x-4) - (6x+15)}{(3x-2)^2}$$

$$= \dfrac{6x - 4 - 6x - 15}{(3x-2)^2}$$

$$= \dfrac{-19}{(3x-2)^2}$$