

4.3 - DERIVATIVES - PRODUCTS AND QUOTIENTS

I. Product Rule

$$y = f(x) = g(x) \cdot h(x)$$

$$y' = f'(x) = g'(x) \cdot h(x) + h'(x) \cdot g(x)$$

OR

$$y' = f'(x) = g(x) \cdot h'(x) + h(x) \cdot g'(x)$$

(since multiplication is commutative)

Examples:

II. Quotient Rule

$$y = f(x) = \frac{t(x)}{b(x)}$$

$$y' = f'(x) = \frac{b(x) \cdot t'(x) - t(x) \cdot b'(x)}{[b(x)]^2}$$

(don't forget that subtraction is not commutative, so you cannot switch the order in the numerator)

Examples: