

THE RULES OF DIFFERENTIATION

CHAPTER 6 OF "A MATHEMATICS COURSE FOR POLITICAL AND SOCIAL RESEARCH"

① Take the derivative using the differentiation rules

$$y = 6 \Rightarrow \frac{df}{dx} = 0$$

$$y = 3x^2 \Rightarrow \frac{df}{dx} = 6x$$

$$y = x^3 - 2x^2 - 1 \Rightarrow \frac{df}{dx} = 3x^2 - 4x$$

$$y = x^4 + 5x \Rightarrow 4x^3 + 5$$

$$y = x^8 \Rightarrow \frac{df}{dx} = 8x^7$$

$$y = ax^n - 1 \Rightarrow \frac{df}{dx} = nax^{n-1}$$

$$y = (x-3)^3 \Rightarrow \text{chamemos } g(f(x)) \text{ de } (x-3)^3 \text{ e } (x-3) = f(x)$$

$$\text{então, pela regra da cadeia, } \frac{dg(f(x))}{dx} = ((x-3)^3)' \cdot (x-3)'$$

$$\Rightarrow \frac{dg(f(x))}{dx} = 3(x-3)^2 \cdot 1 = 3(x-3)^2$$