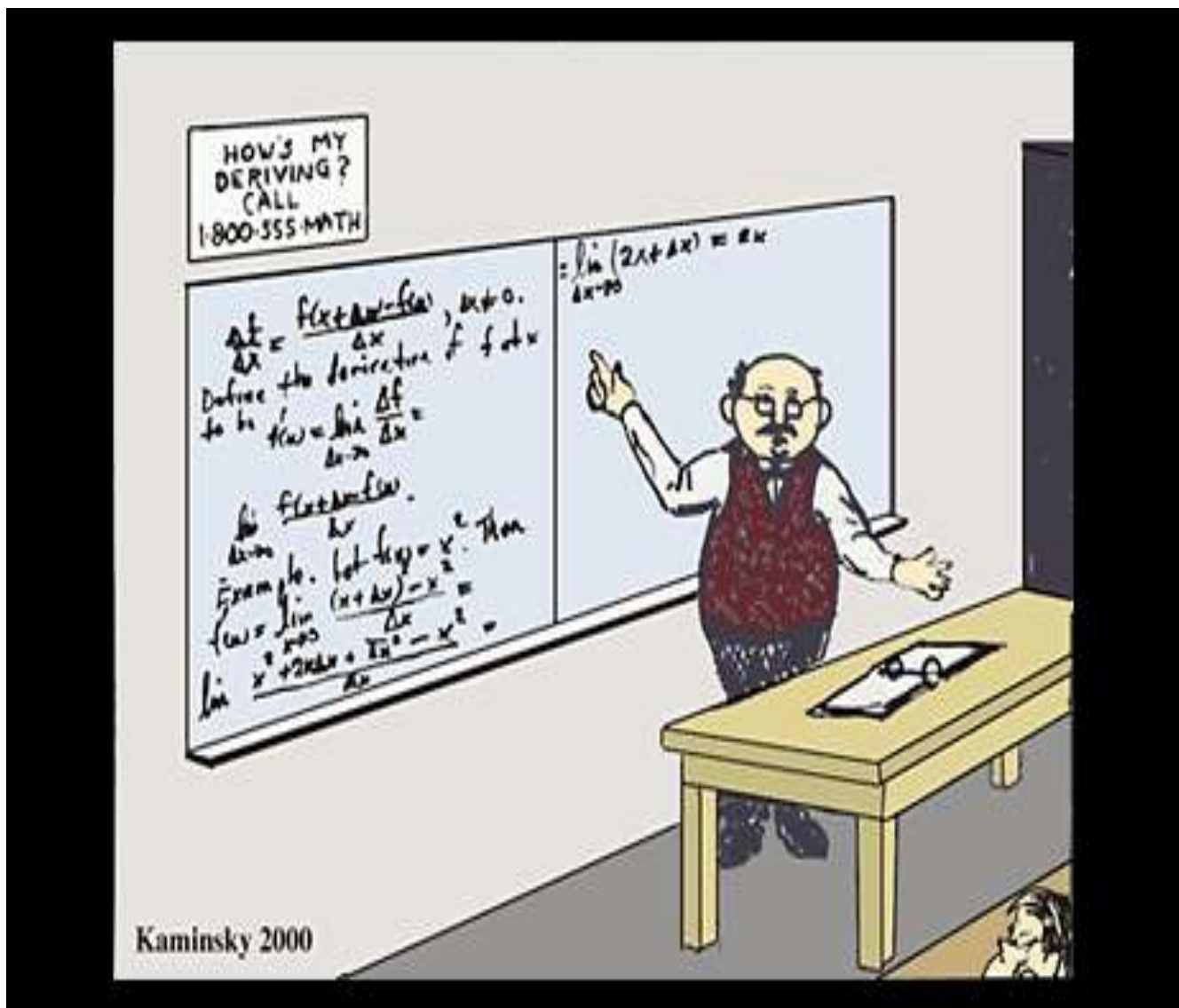


- ❖ Today: Worksheet 10
- ❖ Office Hours: 3–4pm in Padelford C-326
& tomorrow 1:30-2:30 in MSC (CMU B006)
- ❖ Homework 4 collected Friday (WS 9, 10, 11)



Recall:

Basic Rules for Computing Derivatives (WS9):

1) POWER RULE:

$$(x^n)' = nx^{n-1} \quad \text{OR} \quad \frac{d}{dx}(x^n) = nx^{n-1}$$

Example: $\frac{d}{dx}\left(\frac{1}{x}\right) = \frac{d}{dx}(x^{-1}) = (-1)x^{-2} = -x^{-2}$

2) Coefficient Rule: If c is a number, then:

$$(cf(x))' = cf'(x) \quad \text{OR} \quad \frac{d}{dx}(cf(x)) = c \frac{d}{dx}(f(x))$$

Example:

$$(5\sqrt{x})' = (5x^{0.5})' = 5(x^{0.5})' = 5(0.5x^{-0.5}) = 2.5x^{-0.5}$$

3) Sum Rule:

$$(f(x) + g(x))' = f'(x) + g'(x)$$
$$\frac{d}{dx}(f(x) + g(x)) = \frac{d}{dx}(f(x)) + \frac{d}{dx}(g(x))$$

Example:

$$\begin{aligned} \frac{d}{dq}(5q^3 - 2.1q + 7.9) &= \frac{d}{dq}(5q^3) + \frac{d}{dq}(-2.1q) + \frac{d}{dq}(7.9) \\ &= 5(3q^2) + (-2.1) + 0 \\ &= 15q^2 - 2.1 \end{aligned}$$