Vector & Matrix Derivatives

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Lecture 8
September 24, 2018

Reminders

- Homework 2: Linear Algebra + Calculus
  - Out: Mon, Sep. 24
  - Due: Mon, Oct. 1 at 11:59pm

Q&A

MATRIX CALCULUS

Matrix Calculus: Scalar Derivatives

Chalkboard

- – Definition of derivative
- – Interpretation of derivative
- – Derivative examples
- – Product rule
- – Quotient rule
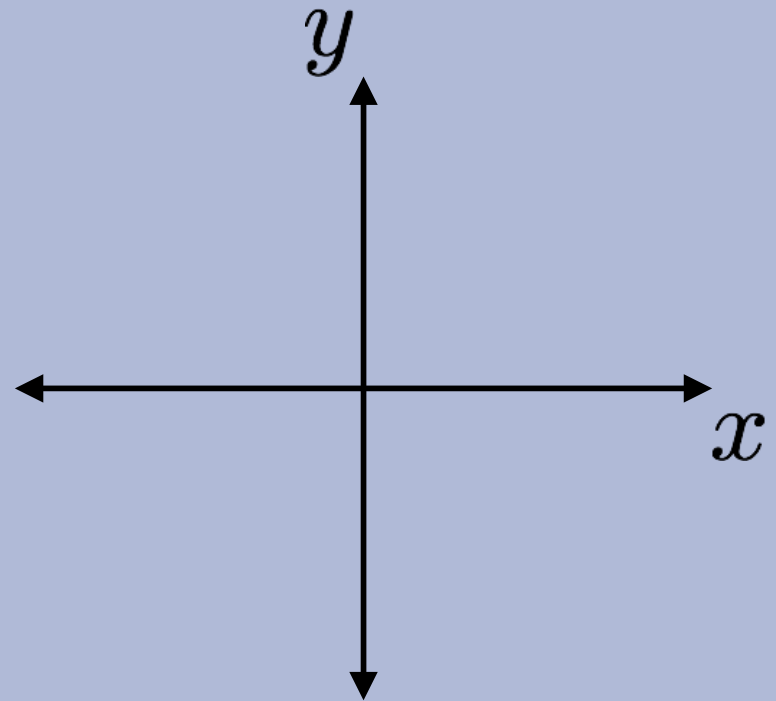- – Chain rule of calculus

Calculus

In-Class Exercise

Plot three functions:

1. $f(x) = x^3 - x$

2. $f'(x) = \dfrac{\partial y}{\partial x}$

3. $f''(x) = \dfrac{\partial^2 y}{\partial x^2}$

Answer Here:

Matrix Calculus: Scalar Derivatives

Chalkboard

- – Partial derivatives

- – Second-order derivatives

Matrix Calculus:
Vector/Matrix Derivatives

Chalkboard

- Vector Derivatives
- Gradient
- Hessian
- Matrix Derivatives
- Common vector derivatives