

Review for FINAL EXAM, MAY 05, 8:00–10:00am

Extra office hour: Friday, May 02, 3:00-5:30:00pm
Before Section 21, see previous reviews

On continuity (Chapter 5).

Properties about continuous functions Boundedness, intermediate value theorem.

Exercise 1:

(a). Prove that $f(x) = x^3 + ax^2 + bx + c$ is a continuous function on R , where a, b, c are three given constants.

(b). Prove that there is a solution to $x^3 + ax^2 + bx + c = 0$.

Derivative (Chapter 6).

Derivative: Definition, algebraic properties, product rule, chain rule.

Exercise 2: If the derivative of function $y = \ln x$ is given by

$$\frac{d}{dx} \ln x = \frac{1}{x},$$

using chain rule to find the derivative of $y = a^x$.

Mean value theorem The theorem, applications (to the inequalities, etc.

Exercise 3. Prove that for $x \geq 1$,

$$\frac{1}{x} + \ln x \leq 1.$$

WARNING: YOU ARE RESPONSIBLE FOR CHECKING OUT MY TYPOS!

Comments and question to: mzhu@math.ou.edu

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