

Dept. of Math. Sci., WPI
MA 3831 Advanced Calculus - I
Instructor: Bogdan Doytchinov, Term C01

Homework Assignment 2

Due Thursday, February 1, 2001

Problem 1. For this problem, assume without proof that there exists an irrational number $c \in (0, 1)$. Using this fact and the properties of rational and irrational numbers that we proved in class:

- (a) Show that, for any two rational numbers r_1, r_2 with $r_1 < r_2$, there exists an irrational number z such that $r_1 < z < r_2$.
- (b) Show that, for any two real numbers x, y with $x < y$, there exists an irrational number z such that $x < z < y$.

Problem 2. Problem 1.10.5, on page 20.

Problem 3. Problem 1.10.7, on page 20.

Problem 4. Problem 1.10.8, on page 20.

Problem 5. Solve Problem 2.2.4 on page 29, and use it to solve Problem 2.2.3 on page 28.

Problem 6. Problem 2.2.2, on page 28.

Problem 7. Problem 2.2.8, on page 29.

Remark: The numbers and pages in problems 2 – 7 refer to the textbook for the course.