

Math 8: Homework 7

Read Chapter 18, Chapter 2, and Chapter 19.

Exercises: These will be due in two parts: Hand in Part A on Thursday, May 26th and Part B on Tuesday, May 31st.

Part A

Chapter 18: #2, #6, #8

Chapter 2: #3

I. Prove that the relation \sim on $\mathbb{Z} \times (\mathbb{Z} \setminus \{0\})$ defined by $(a, b) \sim (c, d)$ if and only if $ad = bc$ is an equivalence relation.

II. Let $a, b, c, d \in \mathbb{Q}$ be such that \sqrt{b} and \sqrt{d} are irrational. Prove that if $a + \sqrt{b} = c + \sqrt{d}$, then $a = c$ and $b = d$. (Hint: You'll want to use Proposition 2.4(ii).)

Part B

Chapter 2: #6

Chapter 19: #2, #4, #6