

Math 215
Homework 5
Due Friday, October 3

Exercises from the text: 6.1, 6.2, 6.5, 7.1, 7.3, 7.4, 7.7, 7.8

To turn in:

1. Let A , B , and C be sets. Prove that

$$(C \cup (B \setminus A)) = (B \cup C) \setminus A \iff A \cap C = \emptyset$$

2. Prove or disprove the following statements:

- (a) $\forall x \in \mathbb{R}, \exists y \in \mathbb{R}$ so that $y^2 = x$.
- (b) $\exists x \in \mathbb{R}$ so that $\forall y \in \mathbb{R}, y^2 = x$.
- (c) $\forall x \in \mathbb{R}, \exists y \in \mathbb{R}$ such that $x = y/2$.
- (d) $\exists x, y \in \mathbb{R}$ such that $x = y^3$.
- (e) There exists $x \in \mathbb{R}$ such that $x < n$ for all positive integers n .
- (f) There exists $x \in \mathbb{R}$ such that $x < n$ for all negative integers n .