Section 1: Please complete the following problems and turn them in at the beginning of class on Friday.

Problem 1: Suppose an equivalence relation $R$ is defined on $\mathbb{R}$. If $R$ is also a function from $\mathbb{R}$ to $\mathbb{R}$, then what function is $R$?

Problem 2: 9.10 from our book.

Problem 3: Prove or disprove: There exists a function $f : \mathbb{R} \rightarrow \mathbb{R}$ that is onto but not one-to-one.

Problem 4: Prove or disprove: Every function $f : \mathbb{R} \rightarrow \mathbb{R}$ that is one-to-one is also onto.

Problem 5: 9.22 from our book.

Problem 6: Prove that the function $f : \mathbb{R} \setminus \{1\} \rightarrow \mathbb{R} \setminus \{2\}$ defined by $f(x) = \frac{2x-1}{x-1}$ is bijective.

Problem 7: Suppose that $A$ and $B$ are two disjoint countable subsets of $\mathbb{R}$. Prove that $A \cup B$ is countable.

Problem 8: Suppose that $A$ is a countable subset of $\mathbb{R}$ and $B = \{0, 1\}$. Prove that $A \times B$ is countable from the definition.

Section 2: Your quiz on Friday will be taken from the problems in this section.

9.26, 9.20, 9.30, 10.13

Section 3: These are extra practice problems.

9.32, 10.4, 10.16