Introduction to Relations

- Read carefully pages 192 through 193 (section 8.1)
- Some key questions to answer:

  1. What is a *relation R from set A to set B*?
  2. If we have a relation R from A to B, and elements $a \in A$ and $b \in B$, when do we say that a *is related to* b *by the relation* R? How do we write that?
  3. There are two extreme examples of relations. What are they? Describe them also in terms of when two elements are related by those relations.
  4. What are the *domain* and *range* of a relation?
  5. What are the domain and range for the two extreme relations from earlier?
  6. How is the *inverse relation* defined?
  7. A well-known relation from $\mathbb{R}$ to $\mathbb{R}$ is the "less-than" relation: xRy if and only if $x < y$. What are the domain and range of this relation? What is the "inverse relation" to it?
  8. How many relations are there on the empty set $A = \emptyset$?
  9. How many relations are there on a set A with one element?

- Practice problems from section 8.1 (page 210): 8.1, 8.2, 8.4, 8.5, 8.7