Equivalence Relations

- Read carefully pages 196 through 198 (section 8.3)
- Some key questions to answer:

  1. When do we say that a relation R on set A is an *equivalence relation*?
  2. For any given set A there is a "smallest possible" equivalence relation. Think of what that relation would be. What are the ordered pairs we are forced to add to an equivalence relation, no matter what?
  3. For a given equivalence relation R on a set A, and an element $a \in A$, what is the *equivalence class* $[a]$?
  4. What is the equivalence class for an integer n where the set $A = \mathbb{Z}$ and the equivalence relation is integer equality?
  5. Suppose that A is a subset of the real numbers, such that the relation "less than or equal to" on A is an equivalence. Prove that A must have at most one element.

- Practice problems from section 8.3 (page 211): 8.25, 8.28, 8.29, 8.31, 8.34