Trivial and Vacuous Proofs

- Read pages 77 through 80 (section 3.1)
- Some key questions to answer:

  1. What is the difference between *axioms* and *theorems*?
  2. What other terms do we use in place of the word *theorem*? What two factors determine our choice of word?
  3. What is a *corollary*, and what is a *lemma*?
  4. Which quantified statement do we mean when we write: "for $x \in S$, if $P(x)$ then $Q(x)$"?
  5. When do we say that our proof of a result "for $x \in S$, if $P(x)$ then $Q(x)$" is a *trivial proof*?
  6. Give examples of results with trivial proofs.
  7. When do we say that our proof of a result "for $x \in S$, if $P(x)$ then $Q(x)$" is a *vacuous proof*?
  8. Give examples of results with vacuous proofs.
  9. Explain the main difference between trivial proofs and vacuous proofs.
  10. When can a result have both a trivial proof and a vacuous proof?

- Practice problems from section 3.1 (page 93). In each of these problems, make sure you identify whether you useda trivial proof or a vacuous proof: 3.1, 3.3, 3.5