Due Thursday, June 7, at the start of class. These problems are all from the textbook.

Section 4.1: 5, 7, 45, 55

Section 4.2: 9

Section 4.3: 4, 9, 24, 26, 31, 32

Section 4.4: 6, 11

Section 4.5: 3

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Extra credit: What is wrong with the following "proof" that all horses are the same color?

Let $P(n)$ be the proposition that all the horses in a set of $n$ horses are the same color. Clearly, $P(1)$ is true. Now assume that $P(n)$ is true, so that all the horses in any set of $n$ horses are the same color. Consider any $n+1$ horses; number these as horses 1, 2, 3, ..., $n$, $n+1$. Now the first $n$ of these horses all must have the same color, and the last $n$ of these must also have the same color. Since the set of the first $n$ horses and the set of the last $n$ horses overlap, all $n+1$ must be the same color. This shows that $P(n+1)$ is true and finishes the proof by induction.

(You may not use the colored-horse scene from "The Wizard of Oz" as a counterexample.)