CSE 321: Discrete Structures **Winter 2000**

Assignment #8

Due in class: Wednesday, March 8

1. Section 6.5 Exercise 10

   [You may use the cancellation law: $xy = xz \Longrightarrow y = z$ for all $x, y, z \in \mathbb{Z}$ with $x \neq 0$. In additon, show that R is *not* an equivalence relation when defined over *all* ordered pairs of integers rather that just positive integers.]

2. Section 7.3 Exercise 52

   [A graph $G = (V, E)$ is *simple* if $\forall v \in V, (v, v) \notin E$. The *complement* of a simple graph $G = (V, E)$ is the simple graph $\overline{G} = (V, \overline{E})$ where $\overline{E}$ is defined by $(x, y) \in \overline{E}$ if and only if $(x, y) \notin E$ for all $x, y \in V$ with $x \neq y$.]

3. Section 7.4 Exercise 12

   [Prove this by induction on n. Your inductive step should probably contain words like, "Let G be a connected graph with $n + 1$ vertices," and be certain that you are making no assumptions on the structure of G other than that it is connected.]

4. Section 7.5 Exercise 70

5. Section 7.6 Exercise 24

   [Do *not* attempt to use a graph with negative-weight cycles (shortest paths are not well-defined in this case). Instead, find a graph with one or more negative-weight edges but no negative-weight cycles on which Floyd's Algorithm gives a better result than Dijkstra's Algorithm.]