

CSE 321: Discrete Structures
Assignment #9
March 4, 2009
Due: Friday, March 13, in class

Reading Assignment: Read Sections 8.1 – 8.5, 9.1 – 9.5.

Problems:

1. For the relation $R = \{(b, c), (b, e), (c, e), (d, a), (e, b), (e, c)\}$ on $\{a, b, c, d, e\}$, draw the following relations in directed graph form:
 - (a) The reflexive closure of R .
 - (b) The symmetric closure of R .
 - (c) The transitive closure of R .
 - (d) The reflexive, symmetric, transitive closure of R .
2. A relation R is called *circular* if aRb and bRc imply that cRa for every a, b , and c . Prove that R is reflexive and circular if and only if it is an equivalence relation.
3. Section 8.5, exercise 58 part a).
Extra credit: Part b).
4. Section 9.2, exercise 6.
5. Section 9.2, exercise 18.
6. Section 9.2, exercise 22 and 24.
7. **Extra Credit:** Prove that if an undirected graph G is not connected, then its complement is connected.