CS 2233 Discrete Mathematical Structures – Fall 08

11/12/08

7. Homework

Due **11/24/08** before class

7.2 (page 471) Solve the recurrence relations below using the theorem we had in class: First set up the characteristic equation, then find its roots, and then use the initial conditions to assign values to the α-constants.

(a) (3 points) 4 a

(b) (3 points) 4 d

8.1 (page 527)

(a) (3 points) 2 a,b,c

(b) (4 points) 6 a (Either prove a property for all $x, y, z \in \mathbb{R}$ or give a counterexample.)

8.5 Congruence classes (2 points)
What are the congruence classes $[0]_3, [1]_3, [2]_3, [3]_3$? Please describe each of these congruence classes as sets using "..." notation by listing at least 3 positive and at least 3 negative numbers.

9.2 (page 609)

(a) (1 point) Consider the graph given in exercise 23. Find: the number of vertices, the number of edges, the degree of each vertex. Verify that the handshaking lemma (Theorem 1) holds for this graph.

(b) (1 point) Consider the graph given in exercise 8. Find: the number of vertices, the number of edges, the in-degree and out-degree of each vertex. Verify that the handshaking lemma (Theorem 3) holds for this graph.

9.3 (page 618)

(a) (1 point) Consider the graph given in exercise 2. Represent this graph using adjacency lists.

(b) (1 point) Consider the graph given in exercise 2. Represent this graph using an adjacency matrix.

(c) (1 point) 12.

Extra credit: The question below is for extra credit. Any points earned here may be applied towards any other homework (in order to increase the homework score to $\geq 60\%$).

8.5 (page 562)

(a) (4 points) 16. First write the relation in set notation: $R = \{...\}$, then verify all the properties of an equivalence realtion.