CS 2233 Discrete Mathematical Structures – Fall 09

11/16/09

8. Homework

Due **11/25/09** before class

Please refer to the corresponding exercise sections in the textbook (Rosen, 6th edition).

8.1 (page 527)

(a) (2 points) List all the ordered pairs in the relation $R = \{(a, b) \mid a * b \text{ is even}\}$ on the set $\{1, 2, 3, 4, 5, 6\}$.

(b) (4 points) 4 b

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

(d) (2 points) Give an example of a relation on a set that is reflexive and not symmetric. Justify your answer.

8.2 (page 536)

(a) (2 point) 2

(b) Consider tables 5, 6, and 8 on pages 534–535 of the book.

i. (2 point) Show the result table when the following operation has been performed on table 5:
Select Professor=Cruz

ii. (2 point) Show the result table when the following operation has been performed on table 6:
Project onto Department and Room

iii. (3 points) Give two tables whose 2-join would result in table 8.

8.5 (page 562)

(a) (3 points) What are the congruence classes $[0]_5, [1]_5, [2]_5, [3]_5, [4]_5$? Please describe each of these congruence classes as sets using "..." notation by listing at least 3 positive and at least 3 negative numbers.

(b) (3 points) 16