UNIVERSITEIT VAN AMSTERDAM
INSTITUTE FOR LOGIC, LANGUAGE AND COMPUTATION

Axiomatische Verzamelingentheorie

2005/2006; 2nd Semester
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Homework Set # 1 *Deadline:* February 16th, 2006

Exercise 1 (total of eight points).

Let X be a set and R a binary relation on X. Prove:

(1) If R is a partial preorder (reflexive and transitive), then the relation E defined by

$$xEy :\iff xRy \wedge yRx$$

is an equivalence relation.

(2) Let R be a partial preorder and E be defined as above. Let X^* be the set of E-equivalence classes and R^* defined by

$$C\, R^*\, D :\iff \exists x \in C \exists y \in D (xRy).$$

Then $\langle X^*, R^* \rangle$ is a poset.

Exercise 2 (total of four points).

Exercise 1.4.2 from Devlin's book (p. 9).

Exercise 3 (total of six points).

Exercise 1.6.4 from Devlin's book (p. 14).

Exercise 4 (total of eight points).

Exercise 1.6.6 from Devlin's book (p. 15).