

Matematiska Institutionen  
KTH

**Homework number 2 to SF2736, fall 2011.**

Please, deliver this homework at latest on Wednesday, November 16.

1. (0.2p) Let  $M = \{1, 2, 3, 4, 5, 6, 7\}$ . Describe all equivalence relations  $\mathcal{R}$  on  $M$  such that

$$\{(1, 5), (1, 4), (2, 3), (3, 6)\} \in \mathcal{R}.$$

2. (0.2p) Let  $N$  denote the set  $\{0, 1, 2, 3, \dots\}$ . Find and give an explicit description of a bijection from  $N \times N$  to  $N$ .
3. (0.3p) Is the set of functions from the set of positive integers  $Z^+$  to the set  $\{0, 1\}$  an infinite countable set? Explain your answer with great care!
4. (0.3p) Is the set of bijections from  $Z^+$  to  $Z^+$  an infinite countable set? Explain your answer with great care!