Exercises

- An exercise is a worksheet
- Meant to be started in class
- Meant to be finished at home
- Must be submitted on Thursday before class.
- Should take only an hour or so
- If you demonstrate significant good faith effort you will get full credit (1 point). If you don’t turn it in you will get 0 points.
- Worksheets account for 10% of your grade.

Exercise 1. Mathematical preliminaries. Due by class Thursday Oct. 3, 2013

1. Write a short English description of each set (subset of Exercise 0.1 page 25 Sipser)
    1. {1,3,5,7, …}
    2. {…, -4, -2 , 0, 2, 4, …}
    3. {n | n=2m for some m in Nat}
    4. { w | w is in {0,1}* and w = the reverse of w}
    5. { n | n is in Nat and n=n+1}

2. Write formal descriptions for each of the following sets. (subset of Exercise 0.2 page 25 Sipser)
    1. The set containing 1, 10, and 100
    2. The set containing all integers greater than 5
    3. The set containing the string "aba"
    4. The set containing the empty string
    5. The set containing nothing at all

3. Let A be the set {x,y,z} and B be the set {x,y}. (Exercise 0.3 page 26 Sipser)
    1. Is A a subset of B?
    2. Is B a subset of A?
    3. What is A U B?
    4. What is A $\cap$ B?
    5. What is A $\times$ B?
    6. What is the powerset of B?

4. An n-ary relation is a set of n-tuples. Let the set A = {0,1,2,3,4}. Give the sets of n-tuples for relations over A
    1. The binary Less than relation
    2. The unary Even relation
    3. The ternary relation R(x,y,z) where x+y=z