CS/Math 240: Intro to Discrete Math 2/17/2011

Grading Key for Homework 3

Instructor: Dieter van Melkebeek

Problem 1 (6 points)

Problem 2 (10 points)

Problem 3 (4 points)

Problem 4 (10 points)

Problem 5 (5+5 points)

Extra Credits (10 points)

Common Mistakes

- When using distribtive law for proving problem 2, it is not sufficient to say it holds for 2 sets hence it is implicitly understood that it holds for n sets. You would have to prove that seperately using induction.
- When you are asked to identify a flaw in the given proof as in Question 3, then giving an alternate proof for the same proposition involved cannot be considered to be a valid answer for the question. You should point out that the flaw is in the induciton step and reason out that it does not hold for P(1) because a^{-1} that appears in the denominator is not a natural number.
- For problem 4, many of you had manually listed all the cases tilll the population becomes stabilised. Though this is a valid proof it is not encouraged. The initial values being small led to the stabilisation of the population in about 11 steps. However, if the initial population was given to be a huge number then manually listing out the population after each generation until it stabilises would become tedious. Go in for a more general proof as given in the solution set.
- For problem 5a, though the question is worded in such a way that it asks you to describe the winning strategy,it is implicitly implied that you are required to prove that your strategy would work for all cases.
- In problem 5b what is asked for is a proof that a winning strategy exists for ANY two person game which satisfies the given conditions. This in no way is related to the previous subdivision 5a.

- For the extra credit question, it is not sufficient to prove for small numbers like 1,2 or 3. It should be proved for all possible values that n can take. In all such cases where you can prove a base case and want to generalise then make use of induction.