Discrete Math Homework 7
Due Wednesday, March 1 at the beginning of class

General instructions:
- Use standard size paper (8.5 by 11).
- Answer each question in order using a single column.
- Be neat. If we cannot read your solution it is wrong.
- Show your work. If you just write an answer, you will get minimal credit even if the answer is correct.

Rosen section 2.3.

Question A) Rosen 2.3 Exercise 4 a, b, c (p. 152)

Question B) Rosen 2.3 Exercise 10 (p. 153)

Question C) Rosen 2.3 Exercise 12 (p. 153)

Question D) For each of the functions from Exercise 12 , determine if the function is onto.

Question E) Rosen 2.3 Exercise 22 (p. 153)

Rosen section 2.4

Question F) Rosen 2.4 Exercise 10 a, c, e (p. 168)

Question G) Rosen 2.4 Exercise 12 (p. 168)

Question H) Rosen 2.4 Exercise 14 a, c, g (p. 168)

Question I) Rosen 2.4 Exercise 16 a, d, g (p. 168)

You may choose to solve one (and only one) of the following Extra Credit Problems. If you submit more than one, only the first will be graded.

Extra Credit 1) Consider the sequence defined by the following recurrence relation:

$$a_n = a_{n-1} + 3n^2 - 3n + 1$$
$$a_0 = 1$$

a) Write the first 5 terms of the sequence.
b) Propose a closed form solution for a_n

c) Verify that your solution is correct

Extra Credit 2) Consider the sequences defined by the following recurrence relations.

$$a_n = 2b_{n-1}$$
$$a_0 = 1$$
$$b_n = a_{n-1} + 1$$
$$b_0 = 1$$

a) Write the first 5 terms of the sequences.
b) Come up with a recurrence relation for a that does not use b.
c) Come up with a recurrence relation for b that does not use a.