

# Math 210

## First Hour Exam

Name \_\_\_\_\_

Notes:

1. Show your work. Answers given without indication of how you got the answer may not receive credit
2. Calculators are permitted on this exam. In problems involving calculating a number, however, it is sufficient to leave the calculation in a form in which it can be entered into a calculator (**except where a number is called for in the problem**). If you do use a calculator, you should include this “pre-calculator” expression as part of your answer.

Friday, February 11  
100 pts.



II. Basic stuff.

1. (15 pts.). Some basic set theory Suppose that  $A = \{1, 2, 3\}$  and that  $B = \{2, 3, 4\}$   
Give the following in set notation (i.e., list the elements as above)

a.  $A \cup B$

b.  $A \cap B$

c.  $A \times B$

2. (10 pts.) Using the rules for summation and the formulas we have developed, calculate

$$\sum_{k=1}^{100} (2k + 1)$$

You should be able to write this as a number without using a calculator.



3. (10 pts.)

a. Five panelists are to be selected from a group of ten individuals to be seated at a table on stage in left to right order. The order in which they are placed matters. In how many ways can we do this?

b. In how many ways can we build a subcommittee of five individuals from a group of ten individuals?

4. (10 pts.) Write down the first five lines (as numbers – you should not need a calculator for this) of Pascal's triangle.

5. (10 pts.) (you may want to look at your answer to problem (4). Write out the expansion for  $(x + y)^4$ . You should not need a calculator to write the coefficients.

- IV. (15 pts.) Write down the addition and multiplication table for the integers mod 3

Addition mod 3

+	0	1	2
0			
1			
2			

Multiplication mod 3

*	0	1	2
0			
1			
2			