MATH 579 Exam 3; 2/21/12

Please read the exam instructions.

No books or notes are permitted for this exam; calculators are permitted though. Please indicate what work goes with which problem, and put your name or initials on every sheet. Cross out work you do not wish graded; incorrect work can lower your grade, even compared with no work at all. Show all necessary work in your solutions; if you are unsure, show it. Simplify all numerical answers to be integers, if possible. You have 40 minutes. If you wish, when handing in your exam you may attach your extra credit problem. For more details, see the syllabus.

Choose three problems only from these five.

1. (5-8 points) How many solutions to $w + x + y + z = 20$ are there, where w, x, y, z are positive integers?
2. (5-10 points) How many four-digit positive integers have all four digits different?
3. (5-10 points) How many four-digit positive integers have the sum of their digits at most 33?
4. (5-10 points) How many four-digit positive integers contain the digit 9 and are divisible by 3?
5. (5-12 points) How many surjective functions are there from [6] to [5]?