Problem Set 6, Math 191 Fall '15

This problem set is due Tuesday, October 6, 2015 at **the beginning of class**. All class guide rules apply. **Please remember to set aside "self-work time"** before consulting Piazza or working with others.

(Recall the Mock exam is Saturday, October 3rd! If you miss it, sit down and do the problems for 3 hours at a time of your choice. The exam will be posted online around Saturday afternoon.)

1. Mock Putnam, Problem 1.

2. Mock Putnam, Problem 2.

3. Mock Putnam, Problem 3.

4. Prove or disprove: for any integer n, the number of partitions of n into odd integers equals the number of partitions of n into distinct integers. (Example: 5 can be written as 5, $3 + 1 + 1$, or $1 + 1 + 1 + 1 + 1$ in 3 ways; it can also be written as 5, $4 + 1$, or $3 + 2$ in 3 ways).

5. Mock Putnam, Problem 4.

6. Mock Putnam, Problem 5.

7. Mock Putnam, Problem 6.

8. Let p be an odd prime number. Find the number of subsets $\{1, 2, \ldots, p\}$ with the sum of elements divisible by p.

9. **(required)** How much time (including self-work time) did you spend on this problem set? What comments do you have of the problems? (difficulty, type, enjoyment, etc.)