Math 105 TOPICS IN MATHEMATICS
REGULAR HOMEWORK – III

February 2 (Mon), 2015

Instructor: Yasuyuki Kachi

   Line #:   52920.

★ **Due date:**   <u>**Wednesday, February 4th, 2015**</u> .

★ **Your paper will be collected in class. No late homework will be accepted.**

   Please see " <u>Rules, Policies and Protocols</u> " p.14 about homework policy.

[I]   (8pts)   (1)   <u>Substitute</u> $\boxed{n = 20}$ <u>in</u> $\boxed{n + 5}$ .Calculate the result.

(2)   <u><u>Substitute</u></u> $\boxed{n = 4}$ <u><u>in</u></u> $\boxed{\dfrac{1}{2}n\left(n + 1\right)}$.   Calculate the result.

[II]   (6pts)   (1)   <u><u>Shift</u></u> $\boxed{n \mapsto n + 1}$ <u><u>in</u></u> $\boxed{n + 7}$.

(2)   <u><u>Shift</u></u> $\boxed{n \mapsto n + 1}$ <u><u>in</u></u> $\boxed{\dfrac{1}{6}n\left(n + 1\right)\left(n + 2\right)}$.

★   Below row numbers in Pascal's triangle are according to "Review of Lectures – IV", page 13. Note that only up to row 7 are shown on that page, but Pascal's triangle has infinitely many rows.

[III]   (8pts)   (a)   Find the fourth spot from the left in row 8 in the Pascal's triangle.

(b)   Find the sixth spot from the left in row 10 in the Pascal's triangle.

[IV]   (8pts)   (a)   Write out the fifth spot from the left in row 16 in the Pascal's triangle, in a fraction form. You don't have to simplify the fraction.

(b)   Write out the tenth spot from the left in row 100 in the Pascal's triangle, in a fraction form. You don't have to simplify the fraction.