Your TA: _____ Seat #: ☐ – ☐

Math 105 TOPICS IN MATHEMATICS

QUIZ – IV (In-Class)

February 20 (Fri), 2015

Instructor: Yasuyuki Kachi

Line #: 52920.

ID # : _____ Name : _____

⋆ In problem [I] below we work on a model where one can divide any dollar amount by any large number (integer). Also, we never round figures. So, one-third of a dollar is never the same as 33 cents (because 33 cents is one-third of 99 cents).

[I] (14pts) You open a bank account, deposit a dollar in that account.

(1) Your bank offers 100 percent interest annually.

After one year, your balance is $ _____ .

(2) Suppose your bank offers a compound interest with 100 percent rate annually.

After two years, your balance is $ _____ .

(3) Suppose the compounding takes place semi-annually. So every half-year the 50 percent of your balance will be accrued as an interest.

After one year, your balance is $ _____ .

(4) Suppose the compounding takes place 12 times annually. So every month $\left(= \frac{1}{12}\text{-th of a year} \right)$, $\frac{1}{12}$ times 100 percent of your balance will be accrued as an interest.

After one year, your balance is $ $\left(1 + \frac{1}{\square}\right)^{\square}$.

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([I] continued)

(5) Suppose the compounding takes place 10^{20} times annually. So every $\frac{1}{10^{20}}$-th of a year, $\frac{1}{10^{20}}$ times 100 percent of your balance will be accrued as an interest.

After one year, your balance is \$ $\left(1 + \frac{1}{\square}\right)^{\square}$.

(6) Is your answer in (5) more than or less than \$2?

☐ It is more than \$2. ☐ It is less than \$2. (Check one.)

(7) Is your answer in (5) more than or less than \$3?

☐ It is more than \$3. ☐ It is less than \$3. (Check one.)

[II] (6pts)

(1) $3! = \square \cdot \square \cdot \square = \_\_\_\_\_$.

(2) $5! = \square \cdot \square \cdot \square \cdot \square \cdot \square = \_\_\_\_\_$.