Your TA: _____ Seat #: ☐ – ☐

Math 105 TOPICS IN MATHEMATICS

QUIZ – VIII (In-Class)

March 27 (Fri), 2015

Instructor: Yasuyuki Kachi

Line #: 52920.

ID # : _____ Name : _____

[I] (4pts) Convert each of the following expression of numbers in the binary system back into the usual decimal system.

(a) 11. (b) 110. (c) 1001. (d) 1111111 (seven straight 1s).

[**Answers**]: (a) _____ (b) _____ (c) _____ (d) _____

[II] (3pts) Convert each of the following expressions of numbers in the usual decimal system into the binary system.

(a) 5. (b) 12. (c) 35.

[**Answers**]: (a) _____ (b) _____ (c) _____

[III] (3pts) Convert each of the following expression of numbers in the hexadecimal system back into the usual decimal system.

(a) C. (b) $1B$. (c) $A5$.

[**Answers**]: (a) _____ (b) _____ (c) _____

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[IV] (3pts) Convert each of the following expressions of numbers in the usual decimal system into the hexadecimal system.

(a) 16. (b) 28. (c) $16^4 - 1$.

[**Answers**]: (a) _____ (b) _____ (c) _____

[V] (3pts) Simplify:

(1) $3^x \cdot 8^x =$ _____ . (2) $a^{\frac{1}{3}} \cdot a^{\frac{5}{3}} =$ _____ .

(3) $\left(a^{\sqrt{3}}\right)^{\sqrt{12}} =$ _____ .

[VI] (2pts) Find the limits:

(1) $\lim_{n \to \infty} \left(1 + \frac{8}{n}\right)^n =$ _____ . (2) $\lim_{n \to \infty} \left(1 - \frac{1}{2n}\right)^n =$ _____ .

[VII] (3pts) Identify the following infinite sum (the answer is an e-to-the-power):

$$1 + \frac{1}{1!} \cdot 3 + \frac{1}{2!} \cdot 3^2 + \frac{1}{3!} \cdot 3^3 + \frac{1}{4!} \cdot 3^4 + \frac{1}{5!} \cdot 3^5 + \cdots = \text{\_\_\_\_\_} .$$