Math 105 TOPICS IN MATHEMATICS
REGULAR HOMEWORK – IV

February 4 (Wed), 2015

Instructor: Yasuyuki Kachi

Line #: 52920.

⋆ Due date: Monday, February 9th, 2015.

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

Please see “Rules, Policies and Protocols” p.14 about homework policy.

[I] (9pts) (1) 3² =? (2) 2³ =? (3) 6² =?

[II] (6pts) (1) Substitute \( x = 5 \) in \( (x+2)^2 \). Calculate the result.

(2) Substitute \( x = 2 \) in \( (x+2)^3 \). Calculate the result.

[III] (9pts) Complete the expansion formula for each of (a) and (b) below:

(a) \( (x+y)^2 = x^2 + \square xy + y^2 \).
(b) \( (x+y)^3 = x^3 + \square x^2 y + \square xy^2 + y^3 \).

[IV] (6pts) True or false:

If \( a, b \) and \( c \) satisfy \( a + b + c = 0 \), then \( a^3 + b^3 + c^3 = 3abc \).

(2) Fill in the box:

If \( a, b, c, p, q \) and \( r \) satisfy \( p = a + b \), \( q = a + c \), \( r = b + c \),

then \( p^3 + q^3 + r^3 - 3pqr = 2 \left( \square \right) \) (in terms of \( a,b,c \)).