Instructor: Yasuyuki Kachi

Line #: 52920.

[I] (9pts) $3^2 = 3 \cdot 3 = 9.$ $2^3 = 2 \cdot 2 \cdot 2 = 8.$ $6^2 = 6 \cdot 6 = 36.$

[II] (6pts)   (1)   <u>Substitution of</u> $\boxed{x = 5}$ $\underline{\underline{\text{in}}}$ $\boxed{\left(x+2\right)^2}$ yields

$$\left(5+2\right)^2 = 7^2 = 49.$$

(2)   <u>Substitution of</u> $\boxed{x = 2}$ $\underline{\underline{\text{in}}}$ $\boxed{\left(x+2\right)^3}$ yields

$$\left(2+2\right)^3 = 4^3 = 64.$$

[III]   (9pts)   (a) $\left(x+y\right)^2 = x^2 + \boxed{2}\, x\,y + y^2.$

(b) $\left(x+y\right)^3 = x^3 + \boxed{3}\, x^2\,y + \boxed{3}\, x\,y^2 + y^3.$

[IV]   (6pts)   (1)   <u>True or false</u> :

<u>If $a,$ b and c satisfy</u> $\boxed{a + b + c = 0}$, <u>then</u> $\boxed{a^3 + b^3 + c^3 = 3abc}$.

$\star$ The answer is " <u>true</u> " .

(2)

<u><u>If $a,$ $b,$ $c,$ $p,$ q and r satisfy</u></u> $\boxed{p = a+b}$, $\boxed{q = a+c}$, $\boxed{r = b+c}$,

<u><u>then</u></u> $p^3 + q^3 + r^3 - 3pqr = 2 \left(\boxed{a^3 + b^3 + c^3 - 3abc}\right) .$