HONORS Solving Polynomials "Quest" Review Guide – Do all work on a separate piece of paper!

DIRECTIONS: Solve the following polynomials by the graphing method. Check each of your zeros algebraically to verify that they are solutions to the polynomial.

1) $x^3 - 4x^2 - 7x = -10$ 2) $4x^3 - 8x^2 + 4x = 0$ 3) $2x^3 + 5x^2 = 7x$

4) $2x^4 - 5x^3 - 3x^2$ 5) $4x^3 = 4x^2 + 3x$

6) State the formula for the SUM OF CUBES.

7) State the formula for the DIFFERENCE OF CUBES.

*****Remember that you need to have both the sum and difference of cubes formulas memorized for tomorrow; along with the quadratic formula…**

DIRECTIONS: **FACTOR** and **SOLVE** the following polynomials. You need to make sure to pay attention as to when you need to use *sum/difference of cubes*, when to use *the quadratic pattern* and when to *factor out a GCF then completely factor*. ***The degree of the polynomial tells you how many solutions there are!***

8) $x^3 - 6x^2 + 9x = 0$ 9) $x^3 + 27 = 0$ 10) $x^4 - 8x^2 + 7 = 0$ 11) $2x^3 - 18x^2 + 40x = 0$

12) $x^3 - 125 = 0$ 13) $x^4 - 5x^2 + 4 = 0$ 14) $3x^3 - 2x^2 - 5x = 0$ 15) $27x^3 + 1 = 0$

16) $8x^3 - 27 = 0$ 17) $x^4 + 4x^2 - 12 = 0$ 18) $64x^3 - 216 = 0$ 19)$x^4 - 4 = 0$

DIRECTIONS: For the following polynomial identities (a) prove algebraically – with justifications and (b) verify the identity numerically with non-zero values.

20) $(a - b)^2 = a^2 - 2ab + b^2$ 21) $(x + y)^2(x - y) = x^3 + x^2y - xy^2 - y^3$

***** Expect to see a couple of questions about something that we covered on our last polynomial test as well… Maybe brush up on graphing polynomials or the process of long division?**