**Polynomial Test Review**

Solutions will be at mskmath.com

If you need more examples, look back at your old quizzes and homework, you have lots of them there!

*YOU MUST BE ABLE TO FACTOR!!!! (7.1)*

* GCF, sum and difference of cubes/squares, 3 term, 4 term, etc.
  + No extra examples, look over your old quiz, the 50 question hw assignment, the other assignments that required factoring… You’ve had lots of practice so far ☺

*Polynomial Operations (7.2)*

* Be able to add, subtract, multiply, and use both synthetic and long division
  + Polynomial operations homework evens for extra practice
* Identify the degree and leading coefficient of a polynomial (and the corresponding end behavior)
  + ex: y = -3x7 + x5 - 3x2 + 2
  + ex: y = 2x(x-4)2(x+2)3(x-3)4

*Graphing Polynomials (7.3)*

* Know end behavior, x and y-intercepts, and multiplicity of zeros
  + Ex: Graph
    - 1. P(x) = -2x3 - x2 + x
    - 2. P(x) = x5 - 9x3
    - 3. P(x) = -2(x-1)(x-2)2(x+1)3

*Graphing Polynomials with a calculator (7.4)*

* Know how to find relative minima, maxima, and where the graph is increasing/decreasing
* Be able to solve word problems involving polynomials

*Remainder Theorem (7.5)*

* If you do synthetic division with n (some #) in the box, the remainder is the same as plugging n into the original equation
  + Ex: When x3 – kx -6 is divided by x – 2, the remainder is 4. Find k.
  + Ex: Evaluate f(4) for the polynomial f(x) = x3 – 3x2 + 2 using synthetic division

*Factor Theorem (7.5)*

* If n is a zero of a polynomial, x – n is a factor of the polynomial. If x – n is a factor of a polynomial, then n is a zero. That means if you plug in n, you should get 0. If you do synthetic division with n in the box, you should get a remainder of 0 (because of the remainder theorem ☺)
  + Ex: Is x + 1 a factor of 12x24 – 7x14 – 4x7 – 1?
  + Ex: If 3 is a zero of x3 + 3x2 – 10x – 24, factor completely

*Rational Zero Theorem (7.6)*

* Gives you *possible* rational zeros, include positive and negative
* P/Q where P- factors of constant term, Q- factors of leading coefficient
  + ex: Find the possible rational zeros for the polynomial 4x4 – 7x3 – 4x + 12

*Complex Numbers (7.7)*

* Quadratic formula to find ALL zeros
  + Ex: Find ALL zeros f(x) = x2 – 8x + 25

Finding Zeros (7.6, 7.7)

* ex: Find all the zeros of the polynomial
  + x3 – x2 – 8x + 12
  + x4 – 5x2 + 4
  + x3 + x2 - 4x + 6
  + x4 + 2x3 – 2x2 - 3x + 2