Algebra II
Unit 4 Study Guide

Name _____
Date _____Period: _____

1. Self-assess your understanding of each objective.
2. Solve each problem – look up problems you can't solve, then go back and solve it again.
3. Re-assess your understanding. If you are unsure about a problem, mark this as needing study and identify what you're going to study.

Don't use technology except for arithmetic!!

1. Solve each equation over the set of complex numbers by factoring. a. $4p^4 - 2500 = 0$ b. $x^5 + 4x^4 + 4x^3 + 16x^2 - 12x - 48 = 0$	Yes Maybe No Re-assess Yes Maybe No Study:
2. Use the Leading Coefficient Test to determine the end behavior of a polynomial function. a $f(x) = -4x^3 + 4x^2 - x.$ b. $f(x) = (x^2 - 4)(x + 2)^2$	Yes Maybe No Re-assess Yes Maybe No Study:
3. Use multiplicity to determine the behavior of the graph at the zeros. a. $f(x) = -4x^3 + 4x^2 - x$ b. $f(x) = (x^2 - 4)(x + 2)^2$	Yes Maybe No Re-assess Yes Maybe No Study:
4. Identify the maximum number of turning points. a. $f(x) = -4x^3 + 4x^2 - x$ b. $f(x) = (x^2 - 4)(x + 2)^2$	Yes Maybe No Re-assess Yes Maybe No Study:
5. Find the y-intercept. a. $f(x) = -4x^3 + 4x^2 - x$ b. $f(x) = (x^2 - 4)(x + 2)^2$	Yes Maybe No Re-assess Yes Maybe No Study:
6. Use the information in problems 2 - 5 to sketch the graph of each function.	Yes Maybe No Re-assess Yes Maybe No Study:
7. Divide a polynomial by another polynomial using both long division and synthetic division. **Divide *$3r^3 - 6r - 10$* by *r* – 5 <u>both ways</u>.**	Yes Maybe No Re-assess Yes Maybe No Study:

8. Use synthetic substitution to evaluate $f(x) = x^4 + 7x^3 + 9x - 6$ at f(-4) and f(2).	Yes Maybe No Re-assess Yes Maybe No Study:
9. Use the factor theorem to determine factors of polynomials and solve them. Given that 2 is a zero of $f(x) = x^3 - 5x^2 + 2x + 8$, find the other zeros.	Yes Maybe No Re-assess Yes Maybe No Study:
10. Use Rational Zero Theorem to list all possible rational zeros of a polynomial. a. $f(x) = x^3 + 2x^2 - 5x - 6$ b. $f(x) = 2x^4 + 2x^3 - 10x^2 + 2x - 12$	Yes Maybe No Re-assess Yes Maybe No Study:
11. Use the Fundamental Theorem of Algebra to determine the number of complex zeros of a polynomial function. a. $f(x) = x^3 + 2x^2 - 5x - 6$ b. $f(x) = 2x^4 + 2x^3 - 10x^2 + 2x - 12$	Yes Maybe No Re-assess Yes Maybe No Study:
12. Use Descartes's Rule of Signs to find the number of positive and negative real zeros of a polynomial. a. $f(x) = x^3 + 2x^2 - 5x - 6$ b. $f(x) = 2x^4 + 2x^3 - 10x^2 + 2x - 12$	Yes Maybe No Re-assess Yes Maybe No Study:
13. Put it all together to find the complex zeros of the polynomial functions. a. $f(x) = x^3 + 2x^2 - 5x - 6$ b. $f(x) = 2x^4 + 2x^3 - 10x^2 + 2x - 12$	Yes Maybe No Re-assess Yes Maybe No Study: