ALGEBRA FOR CALCULUS Stretch I Topics List for Exam 4

**Section 4.1**

* Be able to classify the types of polynomial functions (#1 – 10 on p. 306)
* State the power function (leading term) of a polynomial
* Be able to determine end behavior of the graph of a polynomial function, given its function rule (like #11 – 18 on p. 306)
* Be able to determine whether or not a given function is a polynomial and why/why not.
* Given a polynomial function, give its zeros and the multiplicities of those zeros (#27 – 42 on p. 306).
* Determine if the graph of a polynomial function crosses or touches the x axis at x =c (x intercepts) like #27 - 41 odd p. 307 (as done in class).

**Section 4.2**

* Given a polynomial function, be able to indicate its end behavior, zeros and their multiplicities, construct a sign chart, and a rough sketch WITHOUT the use of your calculator. (Like the quiz. Good problems to look at are # 13 – 36 on pp. 318-19)
* Given the graph of a polynomial function, be able to determine whether its degree is even or odd and if its leading coefficient is positive or negative.
* Given the graph of a polynomial function, be able to write a possible function rule for the function.

**Section 4.3**

* Use synthetic division to divide two polynomials.
* Use synthetic division to find function values and be able to explain why this works. ( #23 – 30 on p. 326).
* Use synthetic division to determine whether or not a number is a zero of a polynomial. (# 31 – 38 on p. 327).

**Section 4.4**

* List all the possible rational zeros of a polynomial. (#49 – 54 on p. 338)
* Find all the zeros of a polynomial, including imaginaries (# 55 – 70 on p. 338). You need to show all these steps in order to obtain full credit. This problem will be worth approximately 15 points:
	1. Use the Rational Zero Test to list all the possible rational zeros.
	2. Use your graphing calculator to narrow your choices.
	3. Use synthetic division to test your choices.
	4. List the factored form EACH TIME YOU FIND A ZERO.
	5. List all linear factors and all zeros.
* write a polynomial given its zeros (#1 – 16 on pp. 337-338).

**Section 4.6 Polynomial Inequalities**

* Be able to solve a polynomial inequality using a sign chart. You need to show your sign chart to receive points for the problem. (# 21, 25 – 49 odd pp. 369-70)