

## End of Course Final Concepts to know

1. Factoring – ('easy', 'hard', difference of perfect squares, grouping, and sum and difference of perfect cubes)
2. Imaginary numbers (Includes complex numbers – graphing, adding, subtracting, multiplying, and dividing)
3. Discriminant-Finding it and what it tells us about the solutions
4. Translations / transformations – (Shifting, stretch, compression)
5. Characteristics of a graph (end behavior, increasing/decreasing, positive/negative)
6. Inverse functions (how to find and properties of)
7. Absolute Value (graphs and solving equations and inequalities)
8. Graphing/sketching polynomials given the zero's
9. Systems of Equations (elimination/substitution)- what the solution of a system tells us on a graph...
10. Remainder Theorem, Factor Theorem, and Rational Root Theorem-
11. (Relationship between a factor and a zero or a root/Relationship between factors and their solutions)
12. Radicals (simplifying to simplest radical form), graphing, and solving functions involving radicals.
13. Quadratics (Solving by quadratic formula, by factoring, putting in vertex form, finding the vertex, axis of symmetry)
14. Rational Functions (asymptotes.....vertical and horizontal, intercepts, discontinuities, domain); In addition, adding, subtracting, multiplying, dividing, and solving rational expressions.
15. Factorials
16. Long Division (Synthetic Division)
17. Composite of a function (  $f(g(x))$  )
18. Finding polynomial given zeros (Being able to write factors from zero's and multiplying out)
19. Evaluating Piecewise Functions (no graphing)
20. Domain and Range
21. Exponential rules, solving and simplifying expression using exponential rules.
22. Logs-properties of (expansion/condensing), solving equations involving logs and natural logs.
23. Degree and Radians, conversion between the two, sketching angles.
24. pi-3 representations-  $\pi = 180 \text{ degrees} = 3.14... = \frac{22}{7}$
25. Angle of Elevation/Depression
26. Arithmetic and geometric Sequences (finding the nth terms)
27. Trig – (Unit circle, sohcahtoa, reference angle, co-terminal angles, 6 trig functions, graphing sinusoidals)