

## Algebra 2 Topics:

1. Transformation of Functions: Reflections in x & y Axes – Vertical & Horizontal Stretch & Shrink – Translation Up, Down, Left, Right
2. Graphs of Parent Functions: Linear - Absolute Value – Quadratic – Cubic – Radical
3. Factoring: With and without the use of synthetic division – Difference of 2 Squares – Sum and Difference of 2 Cubes – Guess & Check or Ewell Method for Quadratics
4. Standard Form of Quadratic Functions
5. Vertex Form of Quadratic Functions
6. Intercept Form of Quadratic Functions
7. Convert Standard Form to Vertex Form
8. Find Focus & Directrix of a Parabola
9. Solve Quadratic Equation: Factoring
10. Identify Zeros from Factors and Factors from Zeros of a Function
11. Solve Radical Equations
12. Solve Cubic Equations by Synthetic Substitution and Taking Roots
13. Quadratic Formula
14. Find Zeros of a Polynomial
15. Calculator Regression using Lists
16. Create a System of Equations from a Word Description
17. Solve a system of several Equations
18. Solve a polynomial Equation over Complex Numbers
19. Rational Candidates for Zeros of a Polynomial
20. Find Maximum Revenue based on Price Changing that affects Sales
21. Find Maximum or Minimum Value of a Quadratic Function
22. Find Domain and Range of Functions
23. Find where a function is Increasing and Decreasing
24. End Behavior of a Polynomial Function
25. Find Height of a Falling or Thrown Object at a moment in Time
26. Find how long it takes for an object to fall a given distance
27. Draw the graph of a Quadratic Function
28. Given the Graph of a Quadratic Function, Write the Equation
29. Write a Rule that Transforms a function  $f$  to function  $g$ .
30. Use Pascal's Triangle to Expand a Binomial to a Power
31. Long Division
32. Synthetic Division
33. Finding the Discriminant: Discuss how it affects the solutions
34. Given zeros of a Real Polynomial, Find the Polynomial
35. Simplifying Radicals of Various Indices
36. Add, Subtract, Multiply, and Divide Radicals
37. Find the Inverse of a Function
38. Find the Sum, Difference, Product, and Quotient of Functions
39. Check Solutions for Extraneous Answers after Squaring

# Algebra 2 – 1st Semester Exam Review

Name \_\_\_\_\_ Date \_\_\_\_\_ Hr \_\_\_\_\_

**Date:** The entire exam will be completed during the regularly scheduled exam time.  
(Tuesday Jan 26 1<sup>st</sup> /2<sup>nd</sup> hours; Wednesday Jan 27 3<sup>rd</sup> /4<sup>th</sup> hours; Thursday Jan 28 5<sup>th</sup> /6<sup>th</sup> hours)

**Format:** Multiple Choice and Free Response

**Time:** 90 minutes

**Other:** You may not use any additional notes. You **MUST** have a pencil in order to complete the multiple choice section. You may use a graphing calculator.

- **While all topics from the first and second card marking are fair game, focus on the following topics in preparation for the *free response* portion of the exam:**
  - Finding the real solutions of polynomial equation.
  - Writing the equation of a line and understanding slope and y intercept
  - Using the regression feature on the graphing calculator
  - Graphing a parabola and radical function
  - Quadratic functions , identify and interpret the vertex, maximum and minimums
  - Performing Function Operations
- **While all topics from the first and second card marking are fair game, focus on the following topics in preparation for the *multiple choice* portion of the exam:**

## Chap 1 Linear Functions – Know:

- Transformations of Linear and Absolute Value Functions
- Modeling with Linear Functions
- Solve and model a System of Equations - 3 equations 3 unknowns

## Chap 2 Quadratic Functions- Know:

- Transformation of a Parabola
- Graphing a Parabola from standard form and vertex form
- Identify the vertex, the max or min value , domain and range , increasing and decreasing
- Write an equation from the focus and directrix or from the vertex and a point on the parabola

## Chap 3 Quadratic Equations and Complex Numbers) – Know:

- Solving quadratic equations by factoring, quadratic formula and taking the square root of both sides
- Solve a system of nonlinear systems - revisited in section 5.4
- Operations with complex numbers
- Use the discriminant to describe type and number of solutions of a quadratic equation

## Chap 4 Polynomial Functions – Know:

- End Behavior and graphing a polynomial
- Dividing a polynomial
- Factoring polynomial
- Writing a polynomial function from the solutions and from a graph

## Chap 5 Rational Exponents and Radical Functions– Know:

- Properties of Exponents and Radicals
- Solving Radical equations
- Finding the Inverse of a function
- Transformations of a radical function
- Sum , Difference, Product of two functions

## Final Exam Review

|                  |         |                                             |
|------------------|---------|---------------------------------------------|
| <b>Chapter 1</b> | pg. 38  | #2,3,5-12,17,18                             |
| <b>Chapter 2</b> | pg. 84  | #2-8,10,11,13,17                            |
| <b>Chapter 3</b> | pg. 148 | #2-13,16,18-21,23,24,27,30                  |
| <b>Chapter 4</b> | Pg. 226 | #5,8,10-12,15,17,18-21,23,24,29,35,37,40,44 |
| <b>Chapter 5</b> | Pg. 286 | #5,6,8,10,11,13,17,18,21,22,26,28,29, 30,31 |