

Algebra II Course Competencies:

Upon successful completion of this course the student should be able to:

1. Factor quadratic polynomials by using quadratic forms, special forms, and grouping.
2. Perform addition, subtraction, multiplication, and division on rational expressions.
3. Simplify complex fractions.
4. Apply the laws of exponents to simplify expressions containing rational exponents.
5. Apply the laws of radicals to perform addition, subtraction, and multiplication.
6. Rationalize denominators containing radicals.
7. Simplify radicals containing negative radicands.
8. Perform operations with complex numbers.
9. Evaluate functions using function notation.
10. Solve linear inequalities in one variable showing the solution on a number line and in interval notation.
11. Solve literal equations including those that require factoring.
12. Solve systems of linear and nonlinear equations in two variables.
13. Solve polynomial equations by factoring, quadratic formula, graphing, and POLY.
14. Solve equations containing rational expressions.
15. Solve equations containing radicals.
16. Solve linear absolute value equations and inequalities in one variable.
17. Develop and solve mathematical models including variation, mixture, motion, work, and geometrical applications.
18. Graph linear inequalities.
19. Graph quadratic functions.
20. Determine an equation of a line given two points, perpendicular to a given line through a specific point, or parallel to a given line through a specific point.
21. Calculate the distance between two points.
22. Distinguish between functions and non-functions using the vertical line test.
23. Identify the domain and range of a function given its graph or equation.
24. Use function notation.
25. Recognize equations of functions and non-functions.
26. Use concepts of symmetry, intercepts, left to right behavior, asymptotes, and transformations to sketch graphs of functions (constant, linear, quadratic, absolute value, square root, cubic, polynomial, rational, piecewise, exponential, and logarithmic) or non-function (circle) given in its description.
27. Write the equation of a function (constant, linear, quadratic, absolute value, square root, piecewise, cubic, polynomial, rational, exponential, and logarithmic) or non-function (circle) given its description.
28. Use graphs of functions for analysis.
29. Find combinations and composites of functions.
30. Find inverses of functions.
31. Solve linear, polynomial, rational, and absolute value equations and inequalities.
32. Graphs systems of inequalities.

33. Apply linear, polynomial, rational, absolute value, exponential, and logarithmic equations (growth and decay, depreciation, interest, etc.)
34. Examine and analyze data, predictions/interpretations, modeling.
35. Solve systems of equations using various methods including matrices.