

Mathematics
Algebra II: CP
Unit 6: Radical Functions

Essential Understandings	<ul style="list-style-type: none"> ▪ Radical functions can be used to model real-life situations.
Essential Questions	<ul style="list-style-type: none"> ▪ What are the properties of Algebra and how are these used to solve radical equations? ▪ How do you simplify radical expressions? ▪ How do you draw reasonable graphs of radical functions? ▪ How do you rewrite a radical expression using rational exponents?
Essential Knowledge	<ul style="list-style-type: none"> ▪ Algebraic manipulation and properties of exponents are used to solve radical equations.
Vocabulary	<ul style="list-style-type: none"> ▪ <u>Terms:</u> <ul style="list-style-type: none"> ○ rational exponent, conjugates, radical expressions and functions, extraneous solutions
Essential Skills	<ul style="list-style-type: none"> ▪ Apply order of operation. ▪ Manipulate radical expressions. ▪ Identify domain and the range values for radical equations. ▪ Solve radical equations by various means. ▪ Sketch reasonable graphs of radical functions.
Related Maine Learning Results	<p><u>Mathematics</u></p> <p>A. Number Real Number A1.Students will know how to represent and use real numbers.</p> <ol style="list-style-type: none"> a. Use the concept of nth root. b. Estimate the value(s) of roots and use technology to approximate them. c. Compute using laws of exponents. d. Multiply and divide numbers expressed in scientific notation. e. Understand that some quadratic equations do not have real solutions and that there exist other number systems to allow for solutions to these equations. <p>B. Data Measurement and Approximation B1.Students understand the relationship between precision and accuracy.</p> <ol style="list-style-type: none"> a. Express answers to a reasonable degree of precision in the context of a given problem. b. Represent an approximate measurement using appropriate numbers of significant figures. c. Know that most measurements are approximations and explain why it is useful to take the mean of repeated measurements.

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**Related
Maine Learning
Results**

- D. Algebra
Symbols and Expressions
D1. Students understand and use polynomials and expressions with rational exponents.
- Simplify expressions including those with rational numbers.
 - Add, subtract, and multiply polynomials.
 - Factor the common term out of polynomial expressions.
 - Divide polynomials by $(ax+b)$.
- Equations and Inequalities
D2. Students solve families of equations and inequalities.
- Solve systems of linear equations and inequalities in two unknowns and interpret their graphs.
 - Solve quadratic equations graphically, by factoring in cases where factoring is efficient, and by applying the quadratic formula.
 - Solve simple rational equations.
 - Solve absolute value equations and inequalities and interpret the results.
 - Apply the understanding that the solution(s) to equations of the form $f(x) = g(x)$ are x-value(s) of the point(s) of intersection of the graphs of $f(x)$ and $g(x)$ and common outputs in table of values.
 - Explain why the coordinates of the point of intersection of the lines represented by a system of equations is its solution and apply this understanding to solving problems.
- D3. Students understand and apply ideas of logarithms.
- Use and interpret logarithmic scales.
 - Solve equations in the form of $x + b^y$ using the equivalent form $y = \log_b x$.
- Functions and Relations
D4. Students understand and interpret the characteristics of functions using graphs, tables, and algebraic techniques.
- Recognize the graphs and sketch graphs of the basic functions.
 - Apply functions from these families to problem situations.
 - Use concepts such as domain, range, zeros, intercepts, and maximum and minimum values.
 - Use the concepts of average rate of change (table of values) and increasing and decreasing over intervals, and use these characteristics to compare functions.

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Related Maine Learning Results	<p>D5.Students express relationships recursively and use iterative methods to solve problems.</p> <ol style="list-style-type: none"> a. Express the $(n+1)$st term in terms of the nth term and describe relationships in terms of starting point and rule followed to transform one terms to the next. b. Use technology to perform repeated calculations to develop solutions to real life problems involving linear, exponential, and other patterns of change.
Sample Lessons And Activities	<ul style="list-style-type: none"> ▪ Solve radical equations using a variety of techniques. ▪ Simplify radical expressions using properties of algebra.
Sample Classroom Assessment Methods	<ul style="list-style-type: none"> ▪ Evaluate homework. ▪ Quizzes. ▪ Chapter test.
Sample Resources	<ul style="list-style-type: none"> ▪ <u>Publications:</u> <ul style="list-style-type: none"> ○ McDougal Littell Algebra 2 ▪ <u>Other Resources:</u> <ul style="list-style-type: none"> ○ Graphing calculators. ○ The A+ learning system for remediation.