

J. Sargeant Reynolds Community College
Course Content Summary

Course Prefix and Number: MTE 8

Credits: 1

Course Title: Rational Exponents and Radicals

Course Description: Includes simplifying radical expressions, using rational exponents, solving radical equations, and solving applications using radical equations. Credits not applicable toward graduation. Prerequisite: Placement recommendation or MTE 7. Lecture 4 hours per week for $\frac{1}{4}$ semester.

General Course Purpose: This course is designed to give the student understanding and practice in evaluating radical expressions, combining radical expressions, and solving radical equations.

Course Prerequisites and Co-requisites:

Prerequisite: Placement recommendation or MTE 7

Student Learning Outcomes:

Upon completing the course, the student will be able to

- a. Convert between radical and rational exponent form;
- b. Calculate (estimate) square and n^{th} roots using calculator;
- c. Simplify using the properties of rational exponents;
- d. Simplify square and n^{th} roots of variable expressions;
- e. Simplify radicals by using the multiplication and/or division property of radicals;
- f. Define like radicals;
- g. Combine and simplify like radicals;
- h. Multiply and simplify radicals;
- i. Simplify radicals by rationalizing a denominator with one or two terms;
- j. Solve radical equations;
- k. Define $i = \sqrt{-1}$;
- l. Define imaginary numbers (e.g. $\sqrt{-25}$);
- m. Solve problems involving right triangles and/or the Pythagorean Theorem; and
- n. Solve problems involving the distance formula.

Major Topics to Be Included:

- a. Radical and rational exponent forms
- b. Estimation and simplification of radical expressions
- c. Operations on radical expressions
- d. Rationalization of denominators
- e. Radical equations
- f. Imaginary numbers
- g. Applications using radicals, including triangles and distance

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