

WTCS Repository

10-804-118 Interm Algebra w Apps

Course Outcome Summary

Course Information

Description This course offers algebra content with applications. Topics include properties of real numbers, order of operations, algebraic solution for linear equations and inequalities, operations with polynomial and rational expressions, operations with rational exponents and radicals, algebra of inverse, logarithmic and exponential functions.

Total Credits 4.00

Pre/Corequisites

Prerequisite Each Wisconsin Technical College determines the General Education course prerequisites used by their academic institution. If prerequisites for a course are determined to be appropriate, the final Course Outcome Summary must identify the prerequisites approved for use by the individual Technical College.

Course Competencies

1. Apply properties of real number systems

Assessment Strategies

- 1.1. by completing assignments, quizzes, lab work, and tests with a satisfactory score as detailed in the grading scale
- 1.2. by active participation in class discussion and activities

Criteria

Performance will be successful when:

- 1.1. you identify the different sets of real numbers
- 1.2. you use set notations
- 1.3. you find intersections and unions of sets
- 1.4. you graph real numbers on the number line
- 1.5. you compare real numbers

2. Evaluate expressions

Assessment Strategies

- 2.1. by completing assignments, quizzes, lab work, and tests with a satisfactory score as detailed in the grading scale
- 2.2. by active participation in class discussion and activities

Criteria

Performance will be successful when:

- 2.1. you identify additive inverse, absolute values, and reciprocals
- 2.2. you add, subtract, multiply, and divide real numbers
- 2.3. you substitute values for variables

- 2.4. you find powers and roots of real numbers
- 2.5. you apply the order of operation
- 2.6. you evaluate absolute value expressions

3. Solve linear equations

Assessment Strategies

- 3.1. by completing assignments, quizzes, lab work, and tests with a satisfactory score as detailed in the grading scale
- 3.2. by active participation in class discussion and activities

Criteria

Performance will be successful when:

- 3.1. you evaluate formulas
- 3.2. you find equations and formulas for a specific variable
- 3.3. you write and solve equations from given information
- 3.4. you solve application problems using formulas and linear equations

4. Solve linear inequalities

Assessment Strategies

- 4.1. by completing assignments, quizzes, lab work, and tests with a satisfactory score as detailed in the grading scale
- 4.2. by active participation in class discussion and activities

Criteria

Performance will be successful when:

- 4.1. you solve simple and compound linear and compound linear inequalities
- 4.2. you solve absolute value equations and inequalities
- 4.3. you solve word problems involving equations, absolute value, and inequalities
- 4.4. you use interval notation and set builder notations
- 4.5. you graph inequalities

5. Use the Cartesian coordinate system

Assessment Strategies

- 5.1. by completing assignments, quizzes, lab work, and tests with a satisfactory score as detailed in the grading scale
- 5.2. by active participation in class discussion and activities

Criteria

Performance will be successful when:

- 5.1. you find the distance between two points
- 5.2. you find the midpoint of two points
- 5.3. you find the slope given two points or the equation of the line

6. Demonstrate graphing skills on the Cartesian coordinate plane

Assessment Strategies

- 6.1. by completing assignments, quizzes, lab work, and tests with a satisfactory score as detailed in the grading scale
- 6.2. by active participation in class discussion and activities

Criteria

Performance will be successful when:

- 6.1. you plot ordered pairs, read coordinates, and identify x- and y- intercepts
- 6.2. you graph a line, given its slope and point on the line
- 6.3. you graph linear function
- 6.4. you graph linear equations

7. Analyze linear equations

Assessment Strategies

- 7.1. by completing assignments, quizzes, lab work, and tests with a satisfactory score as detailed in the grading scale
- 7.2. by active participation in class discussion and activities

Criteria

Performance will be successful when:

- 7.1. you use slope to determine if two lines are parallel, perpendicular, or neither
- 7.2. you find the equation of a line, given two points of the line
- 7.3. you write the equation of a line in standard, slope-intercept, or point-slope form

8. Apply properties of functions and relations

Assessment Strategies

- 8.1. by completing assignments, quizzes, lab work, and tests with a satisfactory score as detailed in the grading scale
- 8.2. by active participation in class discussion and activities

Criteria

Performance will be successful when:

- 8.1. you distinguish the differences between relations and functions
- 8.2. you find the domain and range of a relation or function
- 8.3. you use function notation
- 8.4. you solve applications involving functions

9. Solve systems of equations and inequalities

Assessment Strategies

- 9.1. by completing assignments, quizzes, lab work, and tests with a satisfactory score as detailed in the grading scale
- 9.2. by active participation in class discussion and activities

Criteria

Performance will be successful when:

- 9.1. you solve systems of two linear equations by graphing, elimination, and substitution methods
- 9.2. you solve systems of three linear equations using elimination and /or substitution methods
- 9.3. you classify systems as consistent/inconsistent or dependent/ independent
- 9.4. you graph absolute value inequalities
- 9.5. you solve application problems involving systems of equations
- 9.6. you solve applications of systems of equations

10. Apply properties of exponents

Assessment Strategies

- 10.1. by completing assignments, quizzes, lab work, and tests with a satisfactory score as detailed in the grading scale
- 10.2. by active participation in class discussion and activities

Criteria

Performance will be successful when:

- 10.1. you apply product, quotient, negative, and zero exponent rules
- 10.2. you apply the power rule for exponents
- 10.3. you change numbers to scientific notation and vice versa
- 10.4. you use scientific notation in calculations

11. Perform basic operations with polynomials

Assessment Strategies

- 11.1. by completing assignments, quizzes, lab work, and tests with a satisfactory score as detailed in the grading scale
- 11.2. by active participation in class discussion and activities

Criteria

Performance will be successful when:

- 11.1. you identify the degree of a polynomial
- 11.2. you add, subtract, multiply, and divide polynomials
- 11.3. you solve application problems involving polynomials

12. Graph functions and relations

Assessment Strategies

- 12.1. by completing assignments, quizzes, lab work, and tests with a satisfactory score as detailed in the grading scale
- 12.2. by active participation in class discussion and activities

Criteria

Performance will be successful when:

- 12.1. you graph quadratic, radical, absolute value, and cubic functions
- 12.2. you interpret rigid transformations of functions
- 12.3. you recognize equations of circle in standard form
- 12.4. you recognize circles in non-standard form
- 12.5. you graph circles

13. Factor polynomials

Assessment Strategies

- 13.1. by completing assignments, quizzes, lab work, and tests with a satisfactory score as detailed in the grading scale
- 13.2. by active participation in class discussion and activities

Criteria

Performance will be successful when:

- 13.1. you calculate the greatest common factors
- 13.2. you factor trinomials
- 13.3. you factor by grouping and by substitution
- 13.4. you factor the difference of two squares, two cubes, and the sum of two cubes

14. Solve equations using factoring

Assessment Strategies

- 14.1. by completing assignments, quizzes, lab work, and tests with a satisfactory score as detailed in the grading scale
- 14.2. by active participation in class discussion and activities

Criteria

Performance will be successful when:

- 14.1. you use the zero factor property
- 14.2. you solve quadratic and cubic equations using factoring

15. Evaluate rational expressions

Assessment Strategies

- 15.1. by completing assignments, quizzes, lab work, and tests with a satisfactory score as detailed in the grading scale
- 15.2. by active participation in class discussion and activities

Criteria

Performance will be successful when:

- 15.1. you identify and simplify rational expressions
- 15.2. you find domain of rational expressions
- 15.3. you add, subtract, multiply, and divide rational expressions
- 15.4. you simplify complex fractions

16. Solve equations involving rational expressions

Assessment Strategies

- 16.1. by completing assignments, quizzes, lab work, and tests with a satisfactory score as detailed in the grading scale
- 16.2. by active participation in class discussion and activities

Criteria

Performance will be successful when:

- 16.1. you solve application equations using proportions
- 16.2. you solve application equations by clearing the equation of factors
- 16.3. you check solution for extraneous roots

17. Evaluate radical expressions

Assessment Strategies

- 17.1. by completing assignments, quizzes, lab work, and tests with a satisfactory score as detailed in the grading scale
- 17.2. by active participation in class discussion and activities

Criteria

Performance will be successful when:

- 17.1. you convert radical notations to exponential expressions and vice-versa
- 17.2. you simplify radicals
- 17.3. you apply rules of exponents with positive and negative rational exponents
- 17.4. you add, subtract, multiply, and divide radicals

18. Solve radical equations

Assessment Strategies

- 18.1. by completing assignments, quizzes, lab work, and tests with a satisfactory score as detailed in the grading scale
- 18.2. by active participation in class discussion and activities

Criteria

Performance will be successful when:

- 18.1. you simplify radicals with numerical values
- 18.2. you simplify radical with algebraic terms
- 18.3. you interpret a graph of a radical equation

19. Operate within the complex number system

Assessment Strategies

- 19.1. by completing assignments, quizzes, lab work, and tests with a satisfactory score as detailed in the grading scale
- 19.2. by active participation in class discussion and activities

Criteria

Performance will be successful when:

- 19.1. you identify complex numbers
- 19.2. you simplify radicals that include complex numbers
- 19.3. you add, subtract, multiply, and divide complex numbers

20. Solve quadratic equations

Assessment Strategies

- 20.1. by completing assignments, quizzes, lab work, and tests with a satisfactory score as detailed in the grading scale
- 20.2. by active participation in class discussion and activities

Criteria

Performance will be successful when:

- 20.1. you use square root principle and quadratic formula
- 20.2. you use the Pythagorean Theorem to solve problems involving right triangles
- 20.3. you solve application problems involving quadratic equations

21. Use Algebra functions**Assessment Strategies**

- 21.1. by completing assignments, quizzes, lab work, and tests with a satisfactory score as detailed in the grading scale
- 21.2. by active participation in class discussion and activities

Criteria

Performance will be successful when:

- 21.1. you add, subtract, multiply, and divide functions
- 21.2. you find composites of functions
- 21.3. you identify one-to-one functions
- 21.4. you find and graph inverse functions

22. Apply properties of exponential and logarithmic functions**Assessment Strategies**

- 22.1. by completing assignments, quizzes, lab work, and tests with a satisfactory score as detailed in the grading scale
- 22.2. by active participation in class discussion and activities

Criteria

Performance will be successful when:

- 22.1. you identify, graph and evaluate exponential functions.
- 22.2. you rewrite exponential equations as logarithmic and vice-versa
- 22.3. you use properties of logarithmic equations
- 22.4. you solve exponential and logarithmic equations
- 22.5. you solve applied problems involving exponential and logarithmic equations