

Math 152 Student Outcomes

By the end of this course you should be able to:

ADD, SUBTRACT, MULTIPLY, AND DIVIDE:

1. two functions and find the domain of the new function.
2. polynomials and polynomial functions.
3. and reduce and build rational expressions.
4. and simplify radical expressions, including knowing when to use absolute value notation.
5. and take powers of complex numbers.

SIMPLIFY:

1. expressions using the rules of exponents.
2. expressions using scientific notation.
3. complex rational expressions.
4. radical expressions using rational exponents and the rules of exponents.

EVALUATE:

1. polynomial functions for given values of x .
2. radical functions for given values of x .
3. logarithmic functions using the definition of a logarithm and the properties of logarithms.

DETERMINE:

1. whether two lines are parallel, perpendicular, or neither.
2. the equation of a line through a given point and parallel or perpendicular to a second line.
3. if a relation is a function by looking at its graph, table, or equation.
4. the domain, range, x -value given its y -value, and y -value given its x -value of a function described by its graph.
5. the domain of a function described by its formula.
6. the nature of the roots of a quadratic equation using the discriminant.
7. values of logarithmic and exponential functions on a calculator, including using the change-of base formula for bases other than 10 and e .

EXPRESS:

1. slope as a rate of change, using appropriate units.

GIVEN:

1. two points on a line, find the equation of the line in either slope-intercept form, function form, or standard form.
2. two functions, find a composite function.
3. a function, find a formula for the inverse function, assuming that the given function is 1-1.
4. a pair of points, find the distance between them using the distance formula.
5. the endpoints of a segment, find its midpoint using the midpoint formula.
6. the equation of a circle, find the center and radius of the circle.
7. the center and radius of a circle, find the equation of the circle.

FACTOR:

1. polynomials.

BUILD:

1. a quadratic equation given its roots.

CLASSIFY:

1. quadratic equations in two variables as parabolas, circles, ellipses, or hyperbolas.

SOLVE:

1. linear equations, including identities and/or a contradictions.
2. application problems using linear equations.
3. a formula for a specified variable.
4. application problems using scientific notation.
5. a system of two linear equations.
6. application problems using a system of two linear equations.
7. a system of three linear equations.
8. application problems using a system of three linear equations.
9. linear inequalities in one variable, expressing your answer in set-builder notation, interval notation and as a graph on a number line.
10. application problems using linear inequalities.
11. compound linear inequalities involving set union (**OR**) and set intersection (**AND**) and expressing the answer algebraically, graphically, and using interval notation.
12. linear absolute value equations and inequalities (these translate into compound equations and inequalities).
13. quadratic equations using the methods of factoring, the square root property, and the quadratic formula, approximating irrational solutions.
14. application problems using quadratic equations, including the Pythagorean Theorem.
15. rational equations and check for division by zero.
16. application problems using rational equations.
17. radical equations and check for extraneous roots.
18. application problems using radical equations.
19. maximum and minimum problems.
20. quadratic inequalities in one variable.
21. rational inequalities in one variable.
22. equations that are "in quadratic form" using "u-substitution".
23. exponential equations, including those that require logarithms.
24. application problems using exponential equations.
25. logarithmic equations.
26. application problems using logarithmic equations.
27. systems of equations involving one nonlinear equation.
28. systems of equations involving two nonlinear equations.
29. application problems using systems of equations involving one or two nonlinear equations.

INTERPRET FUNCTIONAL NOTATION INVOLVING:

1. linear functions.
2. quadratic functions.
3. rational functions.
4. radical functions.
5. exponential functions.
6. logarithmic functions.

GRAPH:

1. a linear equation using $y = mx + b$ (unless it's a vertical line, $x = a$, where $y = mx + b$ doesn't work).
2. linear inequalities in two variables and systems of linear inequalities in two variables (these make half-planes).
3. a quadratic function by finding the vertex, stating whether the vertex is a maximum or minimum point, writing the equation of the axis of symmetry, finding the y-intercept, and finding the x-intercepts.
4. exponential and logarithmic functions.
5. parabolas, circles, ellipses, and hyperbolas.