MINNESOTA



ALGEBRA I

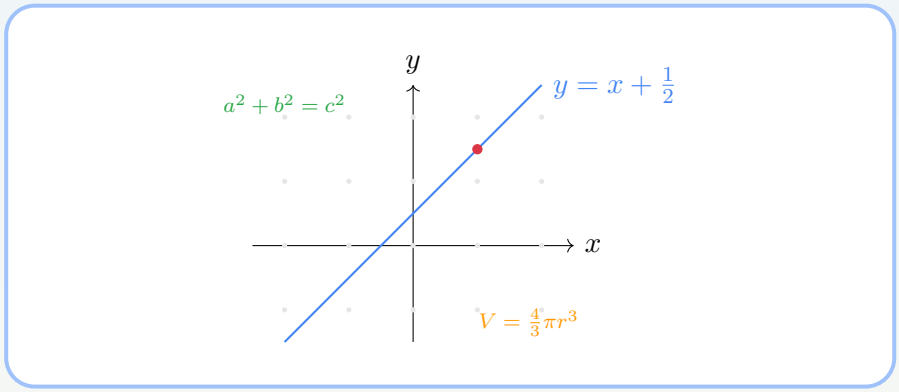
MADE RIDICULOOSLY SIMPLE

THE ULTIMATE STUDY GUIDE TO ACE ALGEBRA I

Minnesota Algebra I

Made Ridiculously Simple

Comprehensive Practice, Challenging Exercises, and Strategic Guidance for Complete Test-Day Confidence



Reza Nazari

Copyrighted Material



Effortless Math Education Inc

Published by Effortless Math Education
www.effortlessmath.com

All rights reserved. No part of this publication may be reproduced, distributed, or transmitted in any form or by any means, including photocopying, recording, or other electronic or mechanical methods, without the prior written permission of the author, except in the case of brief quotations embodied in critical reviews and certain other noncommercial uses permitted by copyright law, including Section 107 or 108 of the 1976 United States Copyright Act.

This publication is independently produced and has no official connection to any state, district, or national testing program.

Test names and organizational names used herein are the property of their respective trademark holders.



Copyright © 2026

Copyrighted Material

9-11.9.2.1.3	Find the domain of a function defined symbolically, graphically or in a real-world context.
9-11.9.2.1.3	Find the domain of a function defined symbolically, graphically or in a real-world context.
9-11.9.2.1.4	Obtain information and draw conclusions from graphs of functions and other relations.
9-11.9.2.1.4	Obtain information and draw conclusions from graphs of functions and other relations.
9-11.9.2.1.5	Identify the vertex, line of symmetry and intercepts of the parabola corresponding to a quadratic function, using symbolic and graphical methods, when the function is expressed in the form f(x) = ax2 + bx + c, in the form f(x) = a(x - h)2 + k, or in factored form.
9-11.9.2.1.5	Identify the vertex, line of symmetry and intercepts of the parabola corresponding to a quadratic function, using symbolic and graphical methods, when the function is expressed in the form f(x) = ax2 + bx + c, in the form f(x) = a(x - h)2 + k, or in factored form.
9-11.9.2.1.5	Identify the vertex, line of symmetry and intercepts of the parabola corresponding to a quadratic function, using symbolic and graphical methods, when the function is expressed in the form f(x) = ax2 + bx + c, in the form f(x) = a(x - h)2 + k, or in factored form.
9-11.9.2.1.6	Identify intercepts, zeros, maxima, minima and intervals of increase and decrease from the graph of a function.
9-11.9.2.1.6	Identify intercepts, zeros, maxima, minima and intervals of increase and decrease from the graph of a function.
9-11.9.2.1.6	Identify intercepts, zeros, maxima, minima and intervals of increase and decrease from the graph of a function.
9-11.9.2.1.7	Understand the concept of an asymptote and identify asymptotes for exponential functions and reciprocals of linear functions, using symbolic and graphical methods.
9-11.9.2.1.7	Understand the concept of an asymptote and identify asymptotes for exponential functions and reciprocals of linear functions, using symbolic and graphical methods.
9-11.9.2.1.8	Make qualitative statements about the rate of change of a function, based on its graph or table of values.
9-11.9.2.1.8	Make qualitative statements about the rate of change of a function, based on its graph or table of values.

Scan Me

9-11.9.2.2.4	Express the terms in a geometric sequence recursively and by giving an explicit (closed form) formula, and express the partial sums of a geometric series recursively.
9-11.9.2.2.4	Express the terms in a geometric sequence recursively and by giving an explicit (closed form) formula, and express the partial sums of a geometric series recursively.
9-11.9.2.2.5	Recognize and solve problems that can be modeled using finite geometric sequences and series, such as home mortgage and other compound interest examples. Know how to use spreadsheets and calculators to explore geometric sequences and series in various contexts.
9-11.9.2.2.5	Recognize and solve problems that can be modeled using finite geometric sequences and series, such as home mortgage and other compound interest examples. Know how to use spreadsheets and calculators to explore geometric sequences and series in various contexts.
9-11.9.2.3.2	Add, subtract and multiply polynomials; divide a polynomial by a polynomial of equal or lower degree.
9-11.9.2.3.2	Add, subtract and multiply polynomials; divide a polynomial by a polynomial of equal or lower degree.
9-11.9.2.3.2	Add, subtract and multiply polynomials; divide a polynomial by a polynomial of equal or lower degree.
9-11.9.2.3.3	Factor common monomial factors from polynomials, factor quadratic polynomials, and factor the difference of two squares.
9-11.9.2.3.3	Factor common monomial factors from polynomials, factor quadratic polynomials, and factor the difference of two squares.
9-11.9.2.3.4	Add, subtract, multiply, divide and simplify algebraic fractions.
9-11.9.2.3.4	Add, subtract, multiply, divide and simplify algebraic fractions.
9-11.9.2.3.5	Check whether a given complex number is a solution of a quadratic equation by substituting it for the variable and evaluating the expression, using arithmetic with complex numbers.
9-11.9.2.3.5	Check whether a given complex number is a solution of a quadratic equation by substituting it for the variable and evaluating the expression, using arithmetic with complex numbers.
9-11.9.2.3.6	Apply the properties of positive and negative rational exponents to generate equivalent algebraic expressions, including those involving nth roots.



9-11.9.2.3.6 Apply the properties of positive and negative rational exponents to generate equivalent algebraic expressions, including those involving nth roots.

9-11.9.2.3.6 Apply the properties of positive and negative rational exponents to generate equivalent algebraic expressions, including those involving nth roots.

9-11.9.2.3.7 Justify steps in generating equivalent expressions by identifying the properties used. Use substitution to check the equality of expressions for some particular values of the variables; recognize that checking with substitution does not guarantee equality of expressions for all values of the variables.

9-11.9.2.3.7 Justify steps in generating equivalent expressions by identifying the properties used. Use substitution to check the equality of expressions for some particular values of the variables; recognize that checking with substitution does not guarantee equality of expressions for all values of the variables.

9-11.9.2.4.2 Represent relationships in various contexts using equations involving exponential functions; solve these equations graphically or numerically. Know how to use calculators, graphing utilities or other technology to solve these equations.

9-11.9.2.4.2 Represent relationships in various contexts using equations involving exponential functions; solve these equations graphically or numerically. Know how to use calculators, graphing utilities or other technology to solve these equations.

9-11.9.2.4.2 Represent relationships in various contexts using equations involving exponential functions; solve these equations graphically or numerically. Know how to use calculators, graphing utilities or other technology to solve these equations.

9-11.9.2.4.3 Recognize that to solve certain equations, number systems need to be extended from whole numbers to integers, from integers to rational numbers, from rational numbers to real numbers, and from real numbers to complex numbers. In particular, non-real complex numbers are needed to solve some quadratic equations with real coefficients.

9-11.9.2.4.3 Recognize that to solve certain equations, number systems need to be extended from whole numbers to integers, from integers to rational numbers, from rational numbers to real numbers, and from real numbers to complex numbers. In particular, non-real complex numbers are needed to solve some quadratic equations with real coefficients.

9-11.9.2.4.4 Represent relationships in various contexts using systems of linear inequalities; solve them graphically. Indicate which parts of the boundary are included in and excluded from the solution set using solid and dotted lines.

9-11.9.2.4.4 Represent relationships in various contexts using systems of linear inequalities; solve them graphically. Indicate which parts of the boundary are included in and excluded from the solution set using solid and dotted lines.

Scan Me

1.2 Order of Operations and Evaluating Expressions

9-11.9.2.1.6

When an expression has several operations, you need a clear set of rules so everyone gets the same answer. That set of rules is the order of operations, often remembered as PEMDAS (Parentheses, Exponents, Multiplication/Division, Addition/Subtraction). In this section you will practice evaluating expressions step by step — including expressions with fractions, decimals, and negative numbers — and learn how to substitute values for variables and simplify accurately.

Key Concepts & Quick Review

PEMDAS / Order of Operations: When an expression has more than one operation, always follow this order:

P — Parentheses (and other grouping symbols) first

E — Exponents (powers and roots)

M/D — Multiplication and Division, left to right

A/S — Addition and Subtraction, left to right

Evaluating an Algebraic Expression: Replace each variable with its given value, place the value in parentheses, then simplify using PEMDAS. For example, evaluate $3x^2 - 1$ when $x = -2$: $3(-2)^2 - 1 = 3(4) - 1 = 12 - 1 = 11$.

Examples

① Simplify: $6 + 2 \times (5 - 1)^2 \div 4$.

Start inside the parentheses: $5 - 1 = 4$. Next, handle the exponent: $4^2 = 16$. Then multiply/divide left to right: $2 \times 16 = 32$, then $32 \div 4 = 8$. Finally, add: $6 + 8 = 14$.

Answer: 14

② Evaluate $\dfrac{a^2 + 3b}{2c}$ when $a = 4$, $b = -2$, and $c = 5$.

Scan Me

Substitute each value: $\frac{(4)^2+3(-2)}{2(5)}$. Numerator: $16+(-6)=10$. Denominator: 10. So the result is $\frac{10}{10}=1$.

Answer: 1

Practice Problems

Simplify or evaluate each expression. Write your answer on the line.

1. $8+3\times 2=$ _____

2. $(8+3)\times 2=$ _____

3. $12\div 4+5\times 3=$ _____

4. $20-3^2+1=$ _____

5. $4\times(6-2)^2\div 8=$ _____

6. $\frac{18}{3+6}=$ _____

7. $-3+(-4)^2\div 2=$ _____

8. $5^2-4\times 3+7=$ _____

9. $2x+5$ when $x=3$ _____

10. $3a^2-2a$ when $a=-1$ _____

11. $\frac{m+n}{m-n}$ when $m=7,\ n=3$ _____

12. $4(x-1)^2+3$ when $x=2$ _____

Study Tips

- Use the phrase **"Please Excuse My Dear Aunt Sally"** to remember Parentheses, Exponents, Multiplication/Division, Addition/Subtraction.
- Multiplication and division are done *left to right* at the same level—neither one comes first automatically.
- When substituting a negative number for a variable, always wrap it in parentheses to avoid sign errors: write $(-2)^2=4$, not $-2^2=-4$.

Word Problems

13. A phone plan costs \$25 for the base fee plus \$0.05 per text message. If t represents the number of texts, the monthly cost is $25+0.05t$. Find the cost for a month with 120 text messages. _____

Scan Me

14. Marcus earns d dollars per hour and works h hours per week. His weekly pay after a \$15 deduction for parking is $dh - 15$. Calculate his weekly pay when $d = 12$ and $h = 20$.

_____

1.3 Simplifying Algebraic Expressions

9-11.9.2.1.6

Simplifying is all about making expressions shorter and easier to work with. In this section you will use the distributive property to remove parentheses, then combine like terms — terms that have the same variable raised to the same power — to write a simpler, equivalent expression. These skills are the foundation for nearly every algebra problem you will see from here on.

Key Concepts & Quick Review

Like Terms: Terms that have the *same* variable(s) raised to the *same* power. For example, $5x$ and $-3x$ are like terms; $5x$ and $5x^2$ are **not**. To combine like terms, add or subtract their coefficients: $5x + (-3x) = 2x$.

Distributive Property: $a(b + c) = ab + ac$. Use it to remove parentheses, then combine any like terms.

Simplification Strategy: **Step 1** — Distribute to clear all parentheses. **Step 2** — Group like terms together. **Step 3** — Combine the coefficients.

Examples

① Simplify $3(2x + 4) - 5x + 7$.

Distribute the 3: $6x + 12 - 5x + 7$. Combine the x-terms: $6x - 5x = x$. Combine the constants: $12 + 7 = 19$. The simplified expression is $x + 19$.

Answer: $x + 19$

② Simplify $-2(3a - 1) + 4(a + 5)$.

Distribute -2: $-6a + 2$. Distribute 4: $4a + 20$. Put them together: $-6a + 2 + 4a + 20$. Combine a-terms: $-6a + 4a = -2a$. Combine constants: $2 + 20 = 22$. Result: $-2a + 22$.

Answer: $-2a + 22$

Scan Me