3 Full-Length Minnesota Algebra 2 Practice Tests

Full-Length Test Prep with Detailed Answer Explanations

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Welcome to Your Practice Book

3 full-length Algebra 2 tests to diagnose, review, and build confidence

Welcome!

This book gives you **3 full-length Algebra 2 practice tests** with detailed answer explanations, so every test becomes both practice and review. Use the first test as a baseline, study the explanations for questions you miss, then use the next tests to measure growth.

Practice routine

- Take each test in one quiet sitting
- Use a timer and avoid notes
- Mark questions you want to revisit

Improve your score

- Review every missed question
- Write down the mistake pattern
- Practice that kind of problem again

Practice builds confidence. Careful review turns confidence into results.

1 Test — 2 Review — 3 Improve

> Treat each practice test like the real exam: set a timer, work without notes, and finish before checking answers.

How to Use This Book

A clean 3-test path: diagnose, train, rehearse

What is inside

3 full-length practice tests

Each test samples Algebra 2 skills across functions, quadratics, polynomials, rational and radical expressions, exponentials, logarithms, sequences, matrices, trigonometry, conics, statistics, probability, and finance.

Complete answer explanations

Use the explanations as your study guide after each test. The goal is not only to know the answer, but to see the reasoning.

Reference sheet and tracker

Review the formulas before testing, then record your scores and weak topics so each test improves the next one.

Your study rhythm

Suggested pacing: *Take Test 1 without a timer. Study the topics you miss for 5–7 days. Take Test 2 with a timer. Use Test 3 as a dress rehearsal: quiet room, no notes, full timing.*

Question types

Multiple Choice

Work first, then match your answer. Eliminate choices that cannot be right.

Short Answer

Show equations, substitutions, and simplification. Clear work can earn partial credit.

Graphing & Data

Label axes, plot carefully, and connect the graph or table to the question.

1 **Score** — *Mark every answer.*

2 **Study** — *Review missed topics.*

3 **Retry** — *Redo similar problems.*

Test-Taking Tips

Practical habits for Algebra 2 practice tests

During the test

1. Read for the target.

Identify exactly what the question asks before calculating.

2. Set up before solving.

Write the equation, expression, graph feature, or formula you plan to use.

3. Show the algebra.

Keep signs, restrictions, substitutions, and simplification visible.

4. Check reasonableness.

Substitute, estimate, inspect the graph, or compare units.

5. Answer the question asked.

Re-read the final sentence before marking your answer.

Common traps

Inequalities: *flip the sign when multiplying or dividing by a negative.*

Quadratics: *use* $2a$ *in the denominator of the quadratic formula and interpret the discriminant before solving.*

Rational expressions: *excluded values come from the original denominator, even after simplifying.*

Radicals and logs: *check domain restrictions and extraneous solutions.*

Graphs: *scale the axes first, then label intercepts, asymptotes, extrema, or end behavior.*

After the test

Score

Mark each question and write down the test score.

Sort

Group missed questions by topic, not by page number.

Study

Review the explanation, then retry a similar problem.

What You'll Need

Gather materials before you begin

Materials checklist

- ✔ Sharpened pencils
- ✔ Scratch paper
- ✔ Graphing calculator, if allowed
- ✔ Timer for practice tests
- ✔ Good eraser
- ✔ Ruler or straightedge
- ✔ Quiet place to work
- ✔ The answer key for review afterward

Usually allowed

Pencils, scratch paper provided on test day, graphing calculator when your state allows it, and a straightedge for graphing.

Usually not allowed

Phones, notes, textbooks, online help, or any calculator/app not permitted by your official test rules.

Same setup **Same tools** **Better comparison**

A consistent routine makes your scores easier to compare.

Algebra 2 Reference Sheet

High-yield formulas for quick review before each practice test

Functions

Domain = allowed inputs; range = outputs.

Average rate: $\frac{f(b)-f(a)}{b-a}$

$f(x)+k$: up/down; $f(x-h)$: right/left

$af(x)$: vertical stretch/reflection

$f(bx)$: horizontal change

Inverse: $f^{-1}(f(x))=x$

Linear

Slope: $m=\frac{y_2-y_1}{x_2-x_1}$

Point-slope: $y-y_1=m(x-x_1)$

Slope-intercept: $y=mx+b$

Standard: $Ax+By=C$

Parallel: same m; perpendicular: $m_1m_2=-1$

Systems

Solutions are intersections.

Substitution: solve one equation, plug in.

Elimination: align terms, add/subtract.

No solution: parallel lines.

Infinitely many: same line.

Quadratics

Standard: $y=ax^2+bx+c$

Vertex: $y=a(x-h)^2+k$

Factored: $y=a(x-r_1)(x-r_2)$

Axis: $x=-\frac{b}{2a}$

Formula: $x=\frac{-b\pm\sqrt{b^2-4ac}}{2a}$

Discriminant: b^2-4ac

Roots: $r_1+r_2=-\frac{b}{a}$, $r_1r_2=\frac{c}{a}$

Polynomials

Remainder: divide by $x-a$, remainder $f(a)$.

Factor: $x-a$ factor iff $f(a)=0$.

Zeros and factors: $x=r \leftrightarrow (x-r)$

Even degree: same end behavior.

Odd degree: opposite end behavior.

Even multiplicity touches; odd crosses.

Complex Numbers

$i^2=-1$, $i^3=-i$, $i^4=1$

$(a+bi)+(c+di)=(a+c)+(b+d)i$

$(a+bi)(c+di)=(ac-bd)+(ad+bc)i$

Conjugates: $a+bi$, $a-bi$

Real polynomials have conjugate complex roots.

Rational

Excluded values come from original denominator.

Factor first; cancel common factors.

Vertical asymptotes: uncanceled denominator zeros.

Holes: canceled denominator zeros.

Horizontal asymptote compares degrees.

Rational inequality: use sign chart.

Radicals

$a^{m/n}=\sqrt[n]{a^m}=(\sqrt[n]{a})^m$

$a^m a^n=a^{m+n}$

$\frac{a^m}{a^n}=a^{m-n}$

Power function: $f(x)=ax^p$

Radical equations: isolate, power, check.

Even roots need nonnegative radicands.

Exponential

Model: $y=ab^x$

Growth: $b>1$; decay: $0<b<1$

Compound: $A=P(1+\frac{r}{n})^{nt}$

Continuous: $A=Pe^{rt}$

Half-life/decay: $A=A_0(1-r)^t$

Logarithms

$\log_b(x)=y \leftrightarrow b^y=x$

$\log_b(MN)=\log_b M+\log_b N$

$\log_b(M/N)=\log_b M-\log_b N$

$\log_b(M^p)=p\log_b M$

Change base: $\log_b x=\frac{\log x}{\log b}$

Log domain: argument >0.

Sequences

Arithmetic: $a_n=a_1+(n-1)d$

Arithmetic recursive: $a_n=a_{n-1}+d$

Arithmetic sum: $S_n=\frac{n(a_1+a_n)}{2}$

Geometric: $a_n=a_1r^{n-1}$

Geometric recursive: $a_n=ra_{n-1}$

Finite sum: $S_n=\frac{a_1(1-r^n)}{1-r}$

Infinite sum: $S=\frac{a_1}{1-r}$, $|r|<1$

Matrices

Matrix size: rows × columns.

Add/subtract only same dimensions.

Multiply $A_{m\times n}B_{n\times p}=C_{m\times p}$.

Identity: $AI=IA=A$

For 2×2, determinant $ad-bc$.

Algebra 2 Reference Sheet

Trig, conics, data, probability, and modeling reminders

Trigonometry

Unit point: $(\cos\theta, \sin\theta)$

$\sin^2\theta + \cos^2\theta = 1$

$1 + \tan^2\theta = \sec^2\theta$

$\sin = \frac{opp}{hyp}$, $\cos = \frac{adj}{hyp}$, $\tan = \frac{opp}{adj}$

Sine/cosine period: $\frac{2\pi}{|b|}$

Tangent period: $\frac{\pi}{|b|}$

Law of Sines: $\frac{\sin A}{a} = \frac{\sin B}{b} = \frac{\sin C}{c}$

Law of Cosines: $c^2 = a^2 + b^2 - 2ab\cos C$

Trig Graphs

$y = A\sin(B(x - C)) + D$

Amplitude: $|A|$

Period: $\frac{2\pi}{|B|}$ *for sine/cosine*

Period: $\frac{\pi}{|B|}$ *for tangent*

Phase shift: C

Midline: $y = D$

Max/min: $D \pm |A|$

Special Angles

$30^\circ = \frac{\pi}{6}$, $45^\circ = \frac{\pi}{4}$, $60^\circ = \frac{\pi}{3}$

$\sin 30^\circ = \frac{1}{2}$, $\cos 30^\circ = \frac{\sqrt{3}}{2}$

$\sin 45^\circ = \cos 45^\circ = \frac{\sqrt{2}}{2}$

$\sin 60^\circ = \frac{\sqrt{3}}{2}$, $\cos 60^\circ = \frac{1}{2}$

Quadrant signs: ASTC.

Conics

Circle: $(x - h)^2 + (y - k)^2 = r^2$

Parabola: $(x - h)^2 = 4p(y - k)$

or $(y - k)^2 = 4p(x - h)$

Ellipse: $\frac{(x - h)^2}{a^2} + \frac{(y - k)^2}{b^2} = 1$

Hyperbola: $\frac{(x - h)^2}{a^2} - \frac{(y - k)^2}{b^2} = 1$

Conic Details

Circle center (h, k)*, radius* r*.*

Parabola vertex (h, k)*, focus is* $|p|$ *away.*

Ellipse: larger denominator gives major axis.

Ellipse: $c^2 = a^2 - b^2$

Hyperbola: $c^2 = a^2 + b^2$

Asymptotes guide hyperbola branches.

Statistics

Mean: $\bar{x} = \frac{\sum x}{n}$

$z = \frac{x - \mu}{\sigma}$

Residual = actual − predicted

Correlation r *is between* -1 *and* 1*.*

Normal: about $68\%, 95\%, 99.7\%$ *within* $1, 2, 3$ *SDs.*

Data Displays

IQR: $Q_3 - Q_1$

Outlier fence: $Q_1 - 1.5(IQR)$*,* $Q_3 + 1.5(IQR)$

Median resists outliers.

Mean is pulled by outliers.

Standard deviation measures typical distance from mean.

Regression

Residual: actual − predicted.

Positive r*: as* x *rises,* y *tends to rise.*

Negative r*: as* x *rises,* y *tends to fall.*

Strong linear fit: $|r|$ *close to* 1*.*

R^2 *is percent of variation explained.*

Probability

$P(A \mid B) = \frac{P(A \cap B)}{P(B)}$

Independent: $P(A \cap B) = P(A)P(B)$

Either/or: $P(A \cup B) = P(A) + P(B) - P(A \cap B)$

Permutations: ${}_nP_r = \frac{n!}{(n - r)!}$

Combinations: ${}_nC_r = \frac{n!}{r!(n - r)!}$

Binomial: ${}_nC_r p^r (1 - p)^{n-r}$

Counting

Fundamental counting principle: multiply choices.

Permutation: order matters.

Combination: order does not matter.

With replacement: choices stay the same.

Without replacement: choices decrease.

Finance

Simple interest: $I = Prt$

Future amount: $A = P + I$

Compound: $A = P(1 + \frac{r}{n})^{nt}$

Continuous: $A = Pe^{rt}$

Depreciation: $A = P(1 - r)^t$

Percent change: $\frac{new - old}{old}$

Modeling Checks

Linear: constant first differences.

Quadratic: constant second differences.

Exponential: constant ratios.

Domain should match the context.

Round only at the end unless directed.

My Test Tracker

Record scores, review topics, and save your progress online

Name: _____ **Start Date:** _____

Test	Date	Score / 50	Percent	Main topic to review
1				
2				
3				

Review pattern

Test 1

Find your baseline and list the first weak topics.

Test 2

Check whether your review changed the score.

Test 3

Practice under full test conditions.

Track your progress and save your scores on ViewMath.com

Scan the QR code to enter scores, save progress, and review weak topics.

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PRACTICE TEST

1

Practice Test 1

10 Questions

Before You Start

- **Read each question carefully** before choosing your answer.
- **Show your work** on scratch paper when you need to.
- **Skip hard questions** and come back to them later.
- **Check your answers** when you're done.
- **Take your time** — there's no rush!

You've Got This!

Do your best and show what you know!

1. *Use the augmented-matrix step to identify the eliminated variable.*

Before	Operation	After
$[1 \quad 2 \mid 8]$	$R_2 - 3R_1$	$[0 \quad -5 \mid -10]$

(A) x

(B) y

(C) *the constant*

(D) *no variable*

2. *Which statement describes $x < -1$ or $x > 4$?*

(A) *intersection*

(B) *bounded interval*

(C) *union of two rays*

(D) *single point*

3. *Which set contains only irrational numbers?*

(A) $\{\sqrt{2}, \pi, \sqrt{11}\}$

(B) $\{\sqrt{9}, \pi, \sqrt{11}\}$

(C) $\{0.25, \sqrt{2}, \pi\}$

(D) $\{-4, \sqrt{5}, 0\}$

4. *Solve the system $x + y = 9$ and $x - y = 1$.*

(A) $(4, 5)$

(B) $(5, 4)$

(C) $(9, 1)$

(D) $(1, 9)$

5. *Write the point-slope form of a line with slope 5 through $(2, -1)$.*

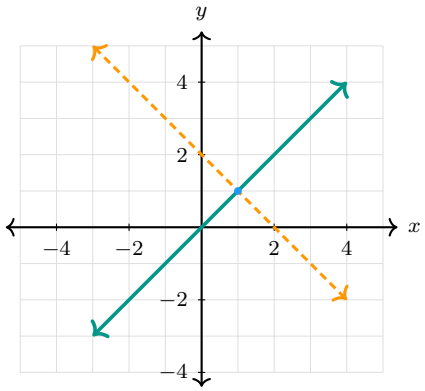
(A) $y + 1 = 5(x - 2)$

(B) $y - 2 = 5(x + 1)$

(C) $y + 1 = 2(x - 5)$

(D) $y = -5x + 2$

6. *Use the graph to identify the system solution.*



(A) $(0, 0)$

(B) $(1, 1)$

(C) $(2, 1)$

(D) $(-1, 1)$

7. *Solve* $|x - 6| = 4$.

(A) $x = 2$ *only*

(B) $x = 10$ *only*

(C) $x = 2$ *or* $x = 10$

(D) *no solution*

8. *Solve* $2(3x + 1) - 4 = x + 18$.

(A) $x = 2$

(B) $x = 4$

(C) $x = 5$

(D) $x = 20$

9. *Use the formula card to identify the discriminant.*

Symbol	*Meaning*
a, b, c	*coefficients in* $ax^2 + bx + c = 0$
D	$b^2 - 4ac$
x	$\frac{-b \pm \sqrt{b^2-4ac}}{2a}$

(A) $a + b + c$

(B) $b^2 - 4ac$

(C) $\frac{-b}{2a}$

(D) $2a$

10. *A ball's height is modeled by* $h(t) = -16t^2 + 64t + 5$. *When does it reach maximum height?*

(A) $t = 1$

(B) $t = 2$

(C) $t = 4$

(D) $t = 5$

Answer Key & Explanations

Answer Key

First try each test on your own, then check your work here.

Practice Test 1 — Answer Key

1 A	2 C	3 A	4 B	5 A	6 B	7 C	8 B	9 B	10 B

Time to Learn!

*Review the explanations below, **especially for the questions you missed**.*

Understanding why each answer is correct builds stronger problem-solving skills.

***Tip:** Circle any questions you got wrong, then read their explanation carefully.*

Practice Test 1 — Detailed Explanations

1. The first entry becomes 0, so the x-variable has been eliminated from the second row.

2. The word or joins values in either separate interval, producing two rays rather than an overlap.

3. Each number in the first set is real but cannot be written as a ratio of integers; the other sets include rational values.

4 Adding the equations gives $2x = 10$, so $x = 5$ and then $y = 4$.

5 Point-slope form is $y - y_1 = m(x - x_1)$, so $y + 1 = 5(x - 2)$.

6 The marked intersection is at $(1, 1)$, which is the point satisfying both lines.

7 An absolute value equation represents distance, so $x - 6 = 4$ or $x - 6 = -4$, giving $x = 10$ or $x = 2$.

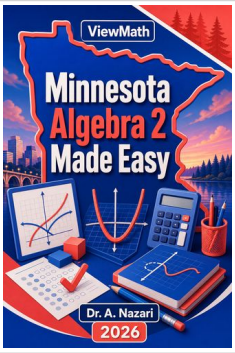
8 Simplify to $6x - 2 = x + 18$, then subtract x and add 2 to get $5x = 20$, so $x = 4$.

9 The table names D as $b^2 - 4ac$, which is the expression under the radical in the quadratic formula.

10 The maximum occurs at the vertex time $t = -\frac{b}{2a} = -\frac{64}{2(-16)} = 2$.

Great Job! Keep Learning with ViewMath!

*Keep up the great work! Visit **viewmath.com/MN-Algebra2** for free lessons, quizzes, and more.*



Study Guide

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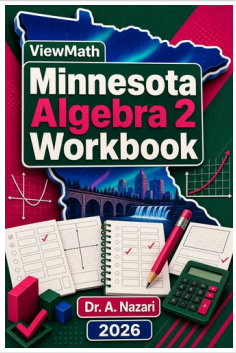

Workbook

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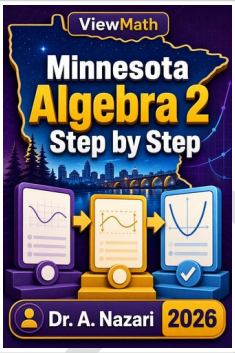

Step-by-Step

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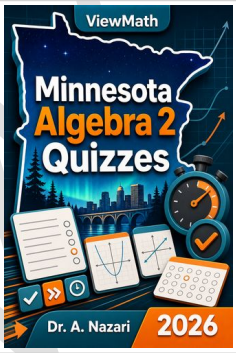

Quizzes

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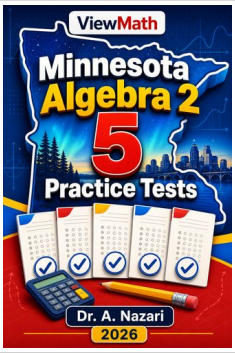

5 Practice Tests

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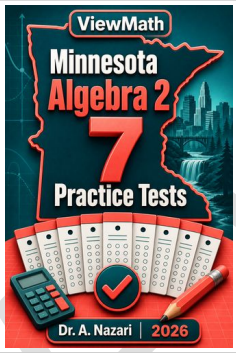

7 Practice Tests

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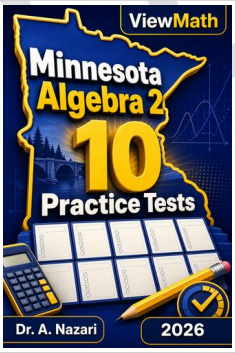

10 Practice Tests

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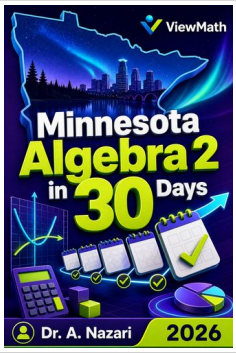

Math in 30 Days

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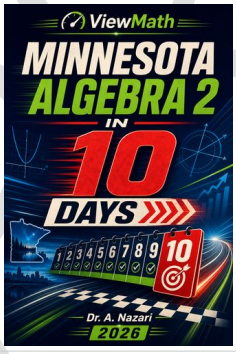

Math in 10 Days

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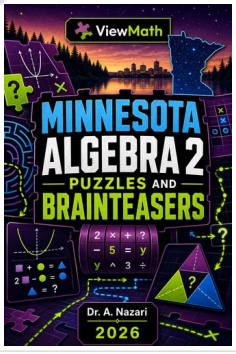

Puzzles

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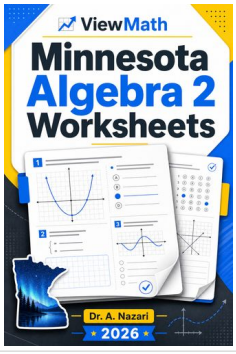

Worksheets

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