5 Full-Length South Carolina Algebra 2 Practice Tests

Full-Length Test Prep with Detailed Answer Explanations

Dr. A. Nazari

Published by View Math Education
ViewMath.com

Welcome to Your Practice Book

5 full-length Algebra 2 tests for steady practice, review, and growth

Welcome!

This book gives you **5 full-length Algebra 2 practice tests** with detailed answer explanations. Use each test to practice under realistic conditions, then turn the answer key into a focused review plan before you move on.

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

More practice gives you more chances to find gaps and close them.

1 Test — 2 Review — 3 Grow

> Time yourself, work in one sitting, and use each practice test as a rehearsal for test day.

How to Use This Book

A 5-test plan for steady Algebra 2 growth

What is inside

5 full-length practice tests

Each test samples the major Algebra 2 strands: functions, quadratics, polynomials, rational and radical models, exponential and logarithmic functions, sequences, matrices, trigonometry, conics, data, probability, and finance.

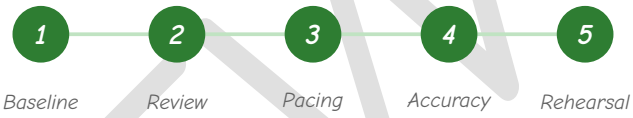
Detailed answer explanations

Score the test, read the explanation, and write down the skill that caused the mistake.

Formula reference and tracker

Use the reference page before each test and the tracker page after each test to make review specific.

Five-test rhythm



Suggested pacing: *Space tests about one week apart. The study days between tests matter most: review missed topics, retry similar problems, and then test again.*

Question types

Multiple Choice

Work first, then match. Use estimation and domain restrictions to eliminate choices.

Short Answer

Show the setup, algebra, and final answer. Partial credit depends on visible reasoning.

Graphing & Data

Label the graph, use scale carefully, and connect features to the model.

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	Focus for next study session
1				
2				
3				
4				
5				

Review pattern

Tests 1–2

Find your baseline and first weak chapters.

Tests 3–4

Build timing and accuracy together.

Test 5

Simulate test day and compare with Test 1.

Track your progress and save your scores on ViewMath.com

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

ViewMath.com/SC-Algebra2

YOUR ONLINE COMPANION

Continue Learning at ViewMath Academy!

For Parents, Teachers & Students

*Great job on the practice tests! Want to keep improving? ViewMath Academy is your **free online companion** to this book.*

- ***Score Analyzer*** *— Enter your answers and instantly see which topics need more practice*
- ***Interactive Lessons*** *— Review the concepts behind each question with clear explanations*
- ***Adaptive Quizzes*** *— Practice your weak topics with questions that match your level*
- ***Progress Tracking*** *— See your mastery grow across all Grade Algebra 2 math topics*
- ***Personalized Dashboard*** *— A learning plan tailored just for you*

Scan to visit ViewMath Academy

ViewMath.com/SC-Algebra2

Free to use • No downloads required • Works on any device

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. *Which expression is equivalent to* 2.5×10^{-3}*?*

(A) 2500 (B) 0.025

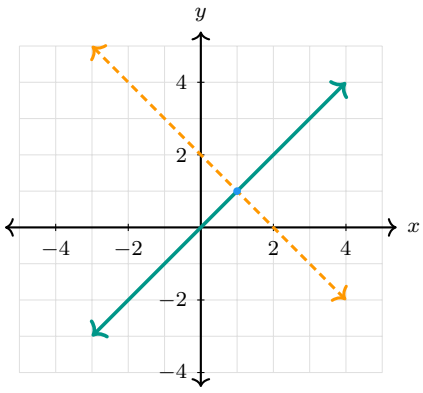
(C) 0.0025 (D) 0.00025

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

(A) $x = 2$ (B) $x = 4$

(C) $x = 5$ (D) $x = 20$

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



(A) $(0, 0)$ (B) $(1, 1)$

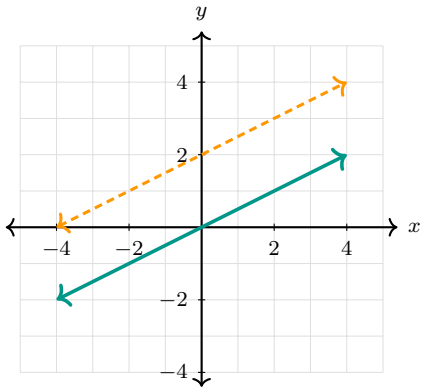
(C) $(2, 1)$ (D) $(-1, 1)$

4. *Solve* $-2 \leq x + 3 < 7$*.*

(A) $-5 \leq x < 4$ (B) $1 \leq x < 10$

(C) $-5 < x \leq 4$ (D) $x \leq -5$ *or* $x > 4$

5. *Use the graph to identify the relationship between the two lines.*



(A) *parallel*
(B) *perpendicular*
(C) *same line*
(D) *not linear*

6. *Which set is ordered from smallest to largest?*

(A) $\{-\sqrt{9}, -2, 0, \sqrt{2}\}$
(B) $\{-2, -\sqrt{9}, 0, \sqrt{2}\}$
(C) $\{0, -2, -\sqrt{9}, \sqrt{2}\}$
(D) $\{-\sqrt{9}, \sqrt{2}, -2, 0\}$

7. *A system's equations reduce to* $0 = 0$. *What is true?*

(A) *no solution*
(B) *exactly one solution*
(C) *infinitely many solutions*
(D) *solution is* $(0, 0)$ *only*

8. *Convert* $3x - 2y = 8$ *to slope-intercept form.*

(A) $y = \frac{3}{2}x - 4$
(B) $y = -\frac{3}{2}x + 4$
(C) $y = 3x - 8$
(D) $y = \frac{2}{3}x + 8$

9. *How many real solutions does $x^2 + 4x + 7 = 0$ have?*

(A) *two*
(B) *one*
(C) *zero*
(D) *infinitely many*

10. *Which restriction is needed for $\frac{f}{g}$ when $g(x) = x + 2$?*

(A) $x \neq -2$
(B) $x \neq 2$
(C) $x \geq -2$
(D) *no restriction*

Answer Key & Explanations

Answer Key

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

Practice Test 1 — Answer Key

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

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. A power of 10^{-3} moves the decimal three places left, so the value is 0.0025.

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

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

4 Subtract 3 from every part of the compound inequality to get $-5 \leq x < 4$.

5 The two lines have the same rise-to-run pattern and never intersect, so they are parallel.

6 Since $-\sqrt{9} = -3$, the order is $-3, -2, 0, \sqrt{2}$.

7 A true identity after elimination means the equations are dependent and represent the same solution set.

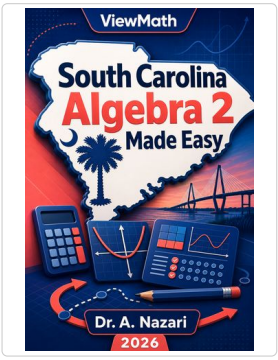
8 Subtract $3x$ and divide by -2: $-2y = -3x + 8$, so $y = \frac{3}{2}x - 4$.

9 The discriminant is $4^2 - 4(1)(7) = -12$, which is negative, so there are no real solutions.

10 A quotient of functions is undefined where the denominator function is zero, so $x + 2 \neq 0$ and $x \neq -2$.

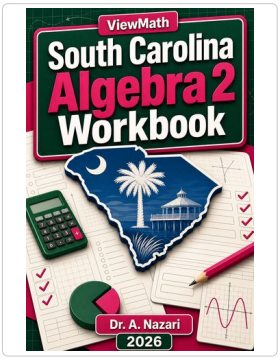
Great Job! Keep Learning with ViewMath!

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



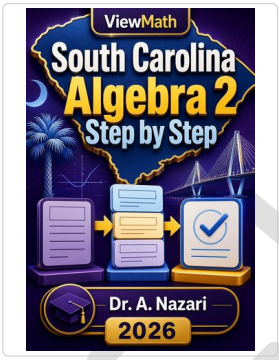
Study Guide

Scan Me



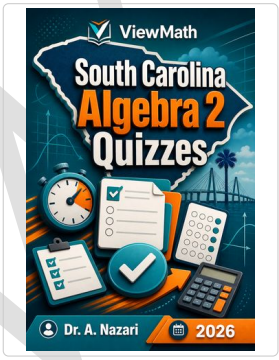
Workbook

Scan Me



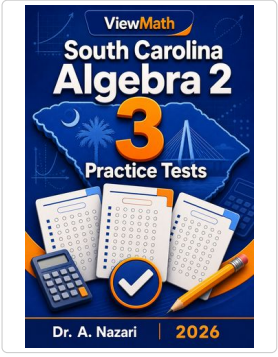
Step-by-Step

Scan Me



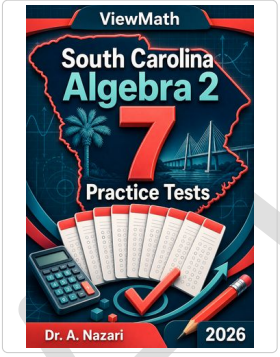
Quizzes

Scan Me



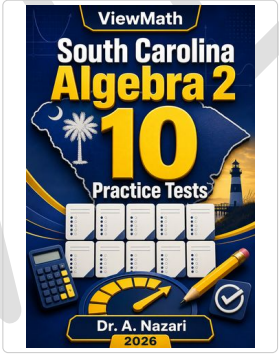
3 Practice Tests

Scan Me



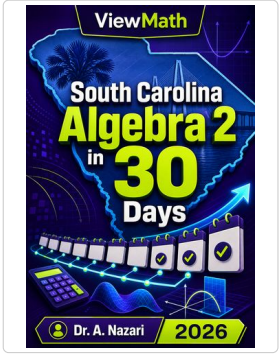
7 Practice Tests

Scan Me



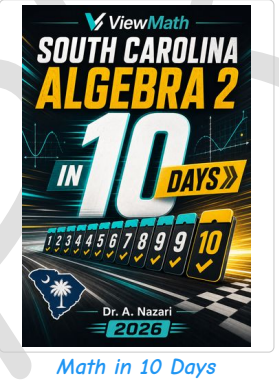
10 Practice Tests

Scan Me



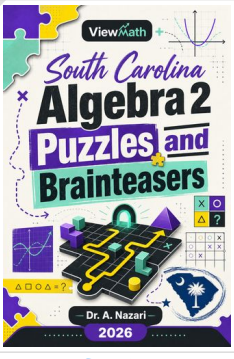
Math in 30 Days

Scan Me



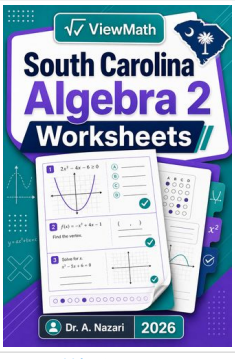
Math in 10 Days

Scan Me



Puzzles

Scan Me



Worksheets

Scan Me