# 6 Full-Length VERMONT ALGEBRA II PRACTICE TESTS



Clear practice, student-friendly explanations, and a steady path through Algebra 2.

**6 FULL-LENGTH TESTS**
Realistic practice to build confidence

**STUDENT-FRIENDLY EXPLANATIONS**
Clear, step-by-step solutions

**BUILD SKILLS**
Strengthen concepts and problem-solving

**A STEADY PATH**
Focused practice to help you reach your goal

SIX-TEST ALGEBRA II WORKBOOK

# Vermont Algebra II Practice Tests

*Clear practice, student-friendly explanations, and a steady path through Algebra 2.*

6

FULL-LENGTH TESTS

ALGEBRA II PRACTICE PATH

- Plan
- Practice
- Review
- Grow

1 Start — 2 Build — 3 Check — 4 Improve

**Six complete tests**
Full-length sets for pacing and stamina.

**Warm explanations**
Step-by-step answer support after every test.

**Vermont aligned**
Standards references placed before the tests.

**Ready to use**
Organized for review, tutoring, and independent study.

Practice with purpose. Review with care. Build Algebra II confidence.

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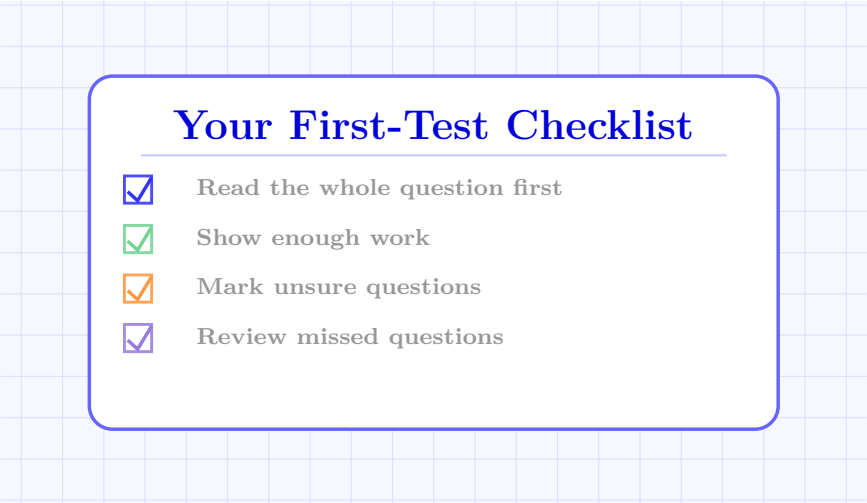
**Pacing rule**

Make a first pass through the test for questions you can solve cleanly. Mark the heavy ones, then return with the time you protected. Good pacing is not rushing; it is choosing where your attention goes.

**Final check before moving on:** Did you answer the exact thing asked? Algebra II problems often ask for one feature of a larger situation. Give the requested feature, not extra work.

# Before You Begin Test 1

Let the first test be useful, not perfect




You do not need to feel completely ready before you start. The purpose of a practice test is to show you what is already strong and what still needs attention.

As you work, pay attention to your habits. Do you read graphs carefully? Do you check restrictions? Do you keep signs and exponents organized? Do you return to difficult questions with a calmer mind? These habits are part of the score, even though they do not look like formulas.

**Six tests give you room to grow. Use the first one to learn where to begin.**

***Work carefully. Review honestly. Let each test make the next one stronger.***

## 1. FUNCTIONS, TRANSFORMATIONS, AND INVERSES

Composition: $(f \circ g)(x) = f(g(x))$

Inverse relationship: $f(g(x)) = x$ and $g(f(x)) = x$

Vertical shift: $f(x) + k$ moves up/down

Horizontal shift: $f(x - h)$ moves right by $h$

Average rate of change: $\dfrac{f(b) - f(a)}{b - a}$

Domain: allowed inputs

Range: possible outputs

## 2. QUADRATICS, POLYNOMIALS, AND COMPLEX NUMBERS

Quadratic formula: $x = \dfrac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

Vertex: $x = -\dfrac{b}{2a}$

Discriminant: $b^2 - 4ac$

Remainder theorem: remainder is $f(a)$ after division by $x - a$

Complex numbers: $i^2 = -1$

Conjugates: $(a + bi)(a - bi) = a^2 + b^2$

## 3. EXPONENTIALS, LOGARITHMS, AND SEQUENCES

Exponential model: $y = ab^x$

Log definition: $\log_b a = c \Leftrightarrow b^c = a$

Change of base: $\log_b a = \dfrac{\log a}{\log b}$

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

Geometric: $a_n = a_1 r^{n-1}$

Finite geometric sum: $S_n = a_1 \dfrac{1 - r^n}{1 - r}$

## 4. TRIGONOMETRY, CONICS, AND STATISTICS

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

Law of sines: $\dfrac{a}{\sin A} = \dfrac{b}{\sin B}$

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

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

Mean: $\bar{x} = \dfrac{\sum x_i}{n}$

Standard deviation: spread around the mean

Normal curve: about $68\%, 95\%, 99.7\%$



Scan Me

S-IC.4 Use data from a sample survey to estimate a population mean or proportion; develop a margin of error through the use of simulation models for random sampling.

S-IC.5 Use data from a randomized experiment to compare two treatments; use simulations to decide if differences between parameters are significant.

S-IC.6 Evaluate reports based on data.

## S-CP

*Conditional Probability and the Rules of Probability*

S-CP.1 Describe events as subsets of a sample space (the set of outcomes) using characteristics (or categories) of the outcomes, or as unions, intersections, or complements of other events ("or," "and," "not").

S-CP.2 Understand that two events $A$ and $B$ are independent if the probability of $A$ and $B$ occurring together is the product of their probabilities, and use this characterization to determine if they are independent.

S-CP.3 Understand the conditional probability of $A$ given $B$ as $P(A \text{ and } B)/P(B)$, and interpret independence of $A$ and $B$ as saying that the conditional probability of $A$ given $B$ is the same as the probability of $A$, and the conditional probability of $B$ given $A$ is the same as the probability of $B$.

S-CP.4 Construct and interpret two-way frequency tables of data when two categories are associated with each object being classified. Use the two-way table as a sample space to decide if events are independent and to approximate conditional probabilities.

S-CP.5 Recognize and explain the concepts of conditional probability and independence in everyday language and everyday situations. For example, compare the chance of having lung cancer if you are a smoker with the chance of being a smoker if you have lung cancer.

S-CP.6 Find the conditional probability of $A$ given $B$ as the fraction of $B$'s outcomes that also belong to $A$, and interpret the answer in terms of the model.

S-CP.7 Apply the Addition Rule, $P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B)$, and interpret the answer in terms of the model.

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Algebra II

# Practice Test 1

1

**Questions:** 50 **Duration:** No time limit

**Calculator Policy:** You may use a scientific calculator.

## Important Test Information

### Question Types:

- **Multiple Choice:** Choose the best answer from the four options (A, B, C, or D).
- **Open-Ended:** Write your complete answer in the space provided.
- **Select All That Apply:** Choose all answers that correctly answer the question.

### Test-Taking Tips:

- Read each question carefully before answering.
- Check your answers before moving on.
- Use the formula sheet as needed.

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**Remember:** Take your time, stay calm, and do your best. You've prepared well for this test—you've got this!