$y = ax^2 + bx + c$

$(x + 2)^2 = 9$

6 Full-Length PENNSYLVANIA 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

Pennsylvania 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



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

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

Pennsylvania 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.

Reza Nazari

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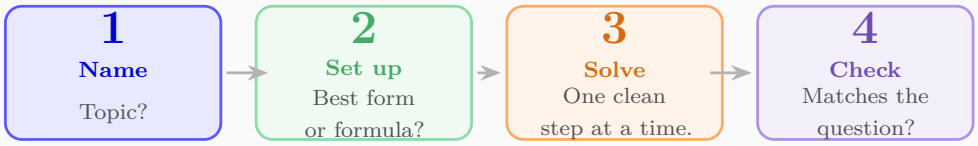
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Test-Day Problem Solving

A calm method for the questions that do not look familiar at first

When a problem feels new, use the routine before you start calculating.



Hard questions often become easier after you name the structure. The goal is not to recognize every problem instantly. The goal is to slow down just enough to choose a sensible first move.

For multiple-choice questions

Use the choices as information. You can estimate, substitute, compare forms, eliminate impossible answers, or test a value in the original equation. If two choices look close, re-read the wording before deciding.

For open-ended questions

Open-ended answers should be compact and exact when possible: a number, an ordered pair, an equation, an interval, or a short expression. Do the work clearly, but make the final answer easy to identify.

For multi-select questions

Treat each option like its own true-or-false statement. Do not stop after finding one correct option. Check all options, especially when a graph or table gives several features at once.

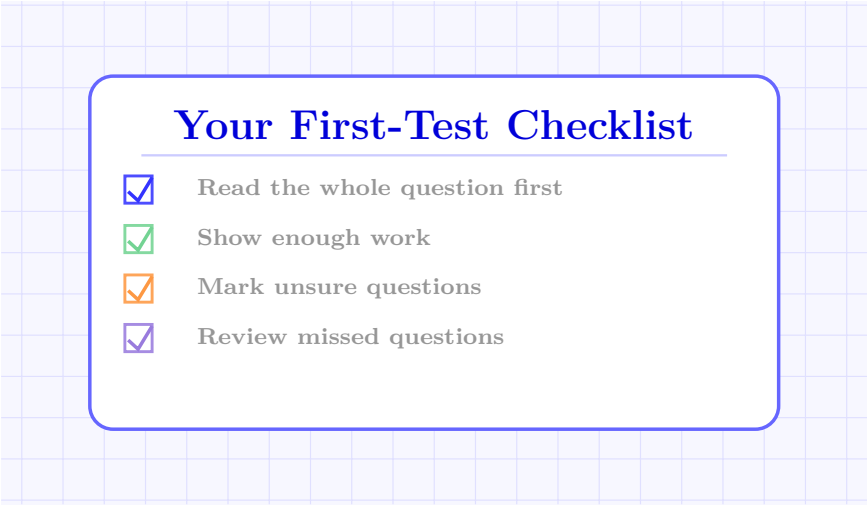
Pacing rule

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.

Algebra II Reference Materials

QUADRATICS AND POLYNOMIALS

Quadratic formula	$x = \dfrac{-b \pm \sqrt{b^2 - 4ac}}{2a}$
Discriminant	$\Delta = b^2 - 4ac$
Vertex of $ax^2 + bx + c$	$x = -\dfrac{b}{2a}$
Remainder theorem	$f(a)$ is the remainder after division by $x - a$
Difference of squares	$a^2 - b^2 = (a - b)(a + b)$

EXPONENTIALS AND LOGARITHMS

Product rule	$\log_b(MN) = \log_b M + \log_b N$
Quotient rule	$\log_b(M/N) = \log_b M - \log_b N$
Power rule	$\log_b(M^p) = p \log_b M$
Change of base	$\log_b a = \dfrac{\log a}{\log b}$
Compound interest	$A = P(1 + r)^t$

SEQUENCES, SERIES, AND COMPLEX NUMBERS

Arithmetic sequence	$a_n = a_1 + (n - 1)d$
Arithmetic series	$S_n = \dfrac{n}{2}(a_1 + a_n)$
Geometric sequence	$a_n = a_1 r^{n-1}$
Geometric series	$S_n = a_1 \dfrac{1 - r^n}{1 - r}$
Imaginary unit	$i^2 = -1$

TRIGONOMETRY AND CONICS

Pythagorean identity	$\sin^2\theta + \cos^2\theta = 1$
Law of sines	$\dfrac{a}{\sin A} = \dfrac{b}{\sin B} = \dfrac{c}{\sin C}$
Law of cosines	$c^2 = a^2 + b^2 - 2ab\cos C$
Circle	$(x - h)^2 + (y - k)^2 = r^2$
Parabola	$(x - h)^2 = 4p(y - k)$ or $(y - k)^2 = 4p(x - h)$

STATISTICS

Mean	$\bar{x} = \dfrac{\sum x_i}{n}$
Standard deviation idea	typical distance from the mean
Margin of error	critical value $\times$ standard error
Empirical rule	about $68\%, 95\%, 99.7\%$ within $1, 2, 3$ SDs

1) A savings account earns interest according to $A = P(1+r)^t$, where P is the principal, r is the annual interest rate (decimal), and t is the number of years. Find A to the nearest cent when $P = \$1{,}000$, $r = 0.05$, and $t = 2$.

☐ A. \$1,102.50
☐ B. \$1,050.00
☐ C. \$2,100.00
☐ D. \$1,100.00

2) A graph displays a country's population versus year, with the y-axis labeled "Population (millions)." At year 2020 the graph shows the value 7.8. What is the population at year 2020?

☐ A. 78,000,000
☐ B. 7,800,000
☐ C. 780,000
☐ D. 7.8

3) Two phone plans are modeled by

$$C_A = 25 + 0.10m \qquad \text{and} \qquad C_B = 10 + 0.25m,$$

where m is the number of minutes used and C is the monthly cost in dollars. At how many minutes do the two plans cost the same?

☐ A. 250
☐ B. 60
☐ C. 150
☐ D. 100

4) A radioactive isotope has a half-life of 12 days. A sample starts at 80 grams. How many grams remain after 36 days?

Record your answer in the space provided.

5) Which description correctly represents the graph of $y \geq |x|$?

☐ A. A downward-opening V (inverted), solid; the region above is shaded.

☐ B. An upward V with vertex at the origin, drawn dashed; the region above is shaded.

☐ C. An upward-opening V with vertex at $(0, 0)$, drawn as a solid line; the region above the boundary is shaded.

☐ D. An upward V with vertex at the origin, solid; the region below is shaded.

6) Which description correctly graphs the inequality $y \geq -2x + 3$?

☐ A. Dashed line through $(0, 3)$ and $(1, 1)$; shade above.

☐ B. Solid line through $(0, 3)$ and $(1, 1)$; shade below.

☐ C. Solid line through $(0, 3)$ and $(1, 1)$; shade the region above the line.

☐ D. Dashed line through $(0, 3)$ and $(1, 1)$; shade below.

7) Factor: $4x^2 - 25$.

☐ A. $(2x + 5)(2x + 5)$

☐ B. $(2x - 5)(2x + 5)$

☐ C. $(2x - 5)^2$

☐ D. $(4x - 5)(4x + 5)$

8) The table has y-values $3, 9, 27, 81$ for consecutive x-values. What is the common ratio between consecutive y-values?

Record your answer in the space provided.

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