6 Full-Length INDIANA 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

Indiana 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.

Indiana 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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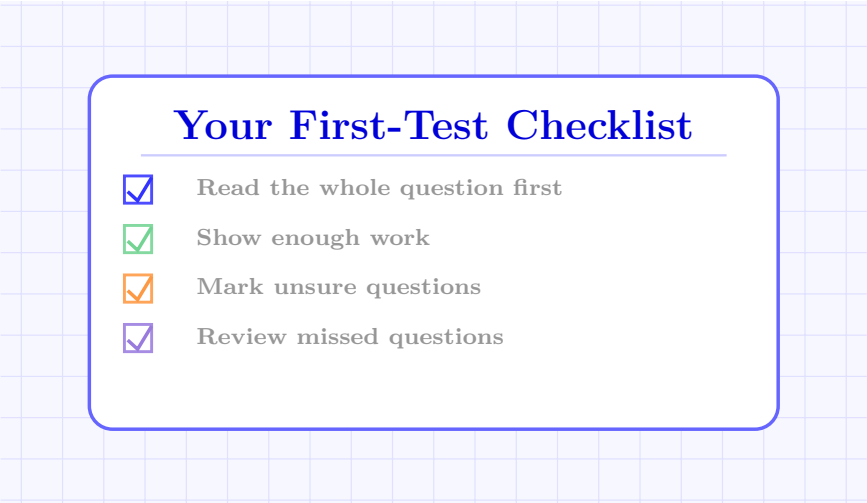
Pacing rule

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 $68\%, 95\%, 99.7\%$

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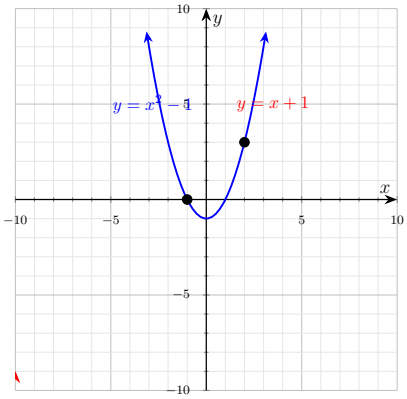
1) Write $\sqrt{x}$ in rational-exponent form, assuming $x \geq 0$.

☐ A. $x^{\frac{1}{2}}$
☐ B. x^2
☐ C. $x^{\frac{-1}{2}}$
☐ D. x^{-2}

2) Which expression is equivalent to $-3(2a - 5b + 4)$?

☐ A. $-6a - 15b - 12$
☐ B. $-6a + 15b - 12$
☐ C. $6a - 15b + 12$
☐ D. $-6a + 15b + 4$

3) The graph shows $y = x + 1$ and $y = x^2 - 1$. What are the solutions to the system?

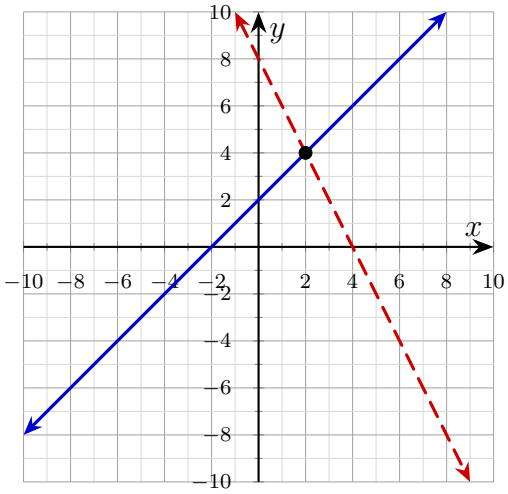


☐ A. $(0, -1)$ and $(2, 3)$
☐ B. $(-1, 0)$ and $(-2, 3)$
☐ C. $(-1, 0)$ and $(2, 3)$
☐ D. $(1, 0)$ and $(2, 3)$

4) Solve $3x^2 + 2x - 7 = 0$. Give exact answers.

Record your answer in the space provided.

5) Where do the lines $y = x + 2$ and $y = -2x + 8$ intersect?

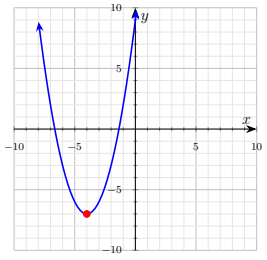


☐ A. $(3, 6)$
☐ B. $(3, -6)$
☐ C. $(-2, 4)$
☐ D. $(2, 4)$

6) The sum of two numbers is 24. The larger number is 4 more than twice the smaller number. What are the two numbers?

☐ A. 16 and 8
☐ B. 12 and 12
☐ C. $\frac{52}{3}$ and $\frac{20}{3}$
☐ D. 18 and 6

7) Which is equivalent to $x^2 + 8x + 9$ in vertex form?



☐ A. $(x + 4)^2 - 7$
☐ B. $(x + 4)^2 + 7$
☐ C. $(x - 4)^2 - 7$
☐ D. $(x + 8)^2 - 55$

8) The graph of $f(x) = x^2 - 2x - 3$ is a parabola. How many x-intercepts does the graph have?

Record your answer in the space provided.

9) What is the vertex of the graph of $f(x) = (x - 3)^2 + 5$?

☐ A. $(-3, 5)$
☐ B. $(3, -5)$
☐ C. $(-3, -5)$
☐ D. $(3, 5)$

10) Which statement describes the graph of $f(x) = x^2$?

☐ A. It opens upward and has vertex $(1, 0)$.
☐ B. It opens upward and has vertex $(0, 0)$.
☐ C. It opens to the right and is not a function of x.
☐ D. It opens downward and has vertex $(0, 0)$.

11) What is the end behavior of $f(x) = 2x^3 - 5x + 4$?

☐ A. $f(x) \to +\infty$ as $x \to \pm\infty$.
☐ B. $f(x) \to -\infty$ as $x \to +\infty$, $f(x) \to +\infty$ as $x \to -\infty$.
☐ C. $f(x) \to +\infty$ as $x \to +\infty$, $f(x) \to -\infty$ as $x \to -\infty$.
☐ D. $f(x) \to 0$ as $x \to \pm\infty$.

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