$y = ax^2 + bx + c$

$(x+2)^2 = 16$

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

7 FULL-LENGTH



INDIANA Algebra II PRACTICE TESTS

Algebra 2 prep made simple with realistic practice, clear answer keys, and student-friendly step-by-step solutions

7 FULL-LENGTH PRACTICE TESTS

CLEAR ANSWER KEYS

STEP-BY-STEP SOLUTIONS

PRACTICE SMART. TEST CONFIDENTLY. SUCCEED.

7

Indiana Algebra II Practice Tests

Algebra 2 prep made simple with realistic practice, clear answer keys, and student-friendly step-by-step solutions.

1 Baseline · 2 Repair · 3 Connect · 4 Stretch · 5 Stabilize · 6 Rehearse · 7 Finish

Full Practice

350 Algebra II questions across 7 complete tests.

Standards First

Indiana standards reference before the tests.

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Answer keys and explanations built for correction.

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A longer path for pacing, stamina, and confidence.

Practice longer. Review smarter. Finish Algebra II stronger.

Reza Nazari

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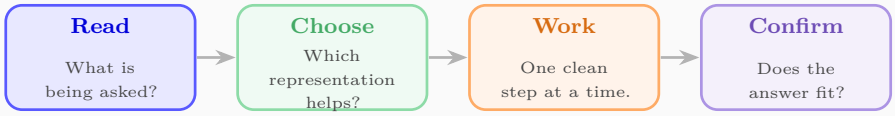
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Advanced Algebra, Calm Thinking

What to do when a problem has more than one step

Difficult questions become manageable when your process stays steady.



By the time you reach a seven-test book, you are not just practicing content. You are practicing how to think when a question asks you to connect several ideas at once.

When the problem includes a graph

Read the axes, scale, labels, intercepts, and direction before touching the choices. A graph often gives the answer's shape before it gives the answer's value.

When the problem includes an equation

Identify the form first. Factored form points to zeros. Vertex form points to maximum or minimum. Standard form may need rewriting. Rational and radical equations may need restrictions checked.

When the problem includes a context

Translate the story into variables, units, and a relationship. Then solve the mathematical question and return to the context so the final answer makes sense.

When time feels tight

Protect the points you can earn. Finish accessible questions first, mark the heavy ones, and come back. A calm second look often solves what a rushed first look could not.

Mindset that actually helps: confidence is not pretending a hard problem is easy. Confidence is knowing you have a process even when the first step is not obvious.

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

1) The formula for the volume of a sphere is $V = \frac{4}{3}\pi r^3$. If r is measured in meters, what is the unit of V?

☐ A. $\frac{\text{m}}{\text{m}^3}$ (per cubic meter)
☐ B. m^2 (square meters)
☐ C. m (meters)
☐ D. m^3 (cubic meters)

2) A chemist mixes x liters of 30% acid solution with y liters of 50% acid solution to make 10 liters of 38% acid solution. How many liters of the 30% solution did she use?

☐ A. 4 liters
☐ B. 6 liters
☐ C. 10 liters
☐ D. 3 liters

3) A movie theater sells adult tickets for \$10 and child tickets for \$6. One evening they sold 200 tickets total and collected \$1,640 in revenue. How many adult tickets were sold that night?

☐ A. 110
☐ B. 200
☐ C. 90
☐ D. 60

4) For what value of k does the following system have *no solution*?

$$kx + 2y = 6, \qquad 3x + y = 4.$$

☐ A. $k = 3$
☐ B. $k = 2$
☐ C. $k = 6$
☐ D. $k = -6$

5) A transformed absolute-value graph has vertex $(-4, 3)$, opens downward, and is vertically stretched by a factor of 2. Write an equation for the graph.

Record your answer in the space provided.

6) Which of the following best states the fundamental theorem of linear programming for a closed, bounded feasible region?

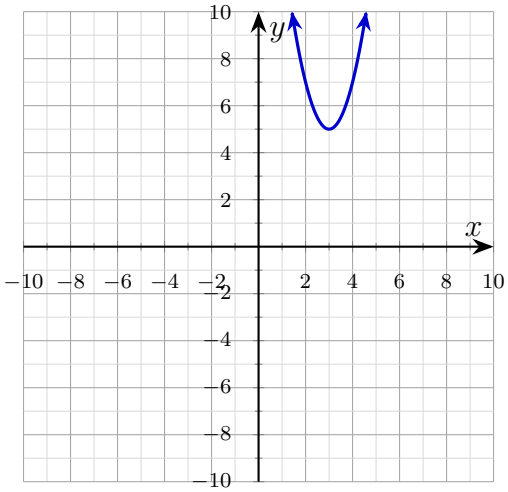
☐ A. The maximum always occurs in the interior of the feasible region.

☐ B. The objective function is maximized at the origin.

☐ C. There is always exactly one optimal solution.

☐ D. The maximum and minimum of the objective function (if they exist) are each attained at least at one vertex of the feasible region.

7) What is the vertex of the parabola represented by $y = 2(x-3)^2 + 5$?



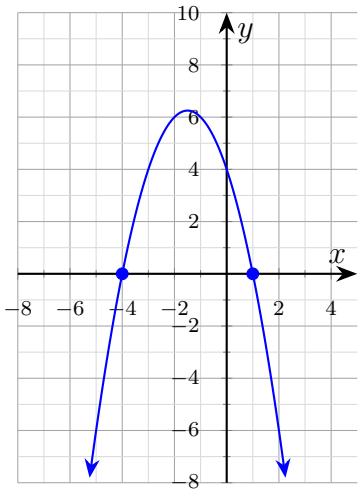
☐ A. $(-3, 5)$

☐ B. $(-3, -5)$

☐ C. $(3, 5)$

☐ D. $(3, -5)$

8) The graph of $y = f(x)$ is shown below. Use the graph to solve $f(x) = 0$.



Which values solve $f(x) = 0$?

☐ A. $x = -5$ and $x = 2$
☐ B. $x = -4$ and $x = 1$
☐ C. $x = -1$ and $x = 4$
☐ D. $x = -4$ only

9) Solve $2x^2 - 5x - 3 = 0$.

☐ A. $x = 3$ or $x = -\frac{1}{2}$
☐ B. $x = 3$ or $x = \frac{1}{2}$
☐ C. $x = \frac{5}{2}$ or $x = -3$
☐ D. $x = -3$ or $x = \frac{1}{2}$

10) Find the inverse of $f(x) = \frac{2x+1}{3}$.

Record your answer in the space provided.