$y = ax^2 + bx + c$

$(x+2)^2 = 16$

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



7 FULL-LENGTH

PENNSYLVANIA

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

Pennsylvania

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

Pennsylvania standards reference before the tests.

Clear Review

Answer keys and explanations built for correction.

Test-Day Ready

A longer path for pacing, stamina, and confidence.

Practice longer. Review smarter. Finish Algebra II stronger.

Reza Nazari

Copyrighted Material

Copyright ©

Effortless Math Education Inc

Published by Effortless Math Education

www.effortlessmath.com

All rights reserved. No part of this publication may be reproduced, distributed, or transmitted in any form or by any means, including photocopying, recording, or other electronic or mechanical methods, without the prior written permission of the author, except in the case of brief quotations embodied in critical reviews and certain other noncommercial uses permitted by copyright law, including Section 107 or 108 of the 1976 United States Copyright Act.

This publication is independently produced and has no official connection to any state, district, or national testing program.

Test names and organizational names used herein are the property of their respective trademark holders.

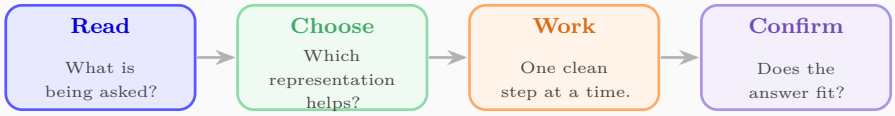
Copyright ©

Copyrighted Material

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 amount of flour F, in grams, needed for m muffins is modeled by $F = 250\left(\frac{m}{12}\right)$. How many grams of flour are needed to make 36 muffins?

☐ A. 83.3 g
☐ B. 250 g
☐ C. 9,000 g
☐ D. 750 g

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

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

3) Solve the system:

$$x + y = 7, \qquad x - y = 3.$$

☐ A. $(2, 5)$
☐ B. $(5, 2)$
☐ C. $(4, 3)$
☐ D. $(7, 3)$

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

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

5) Simplify $\frac{7 + i}{3 - 2i}$ and write the result in standard form $a + bi$.

Record your answer in the space provided.

6) A linear expression $-3x + 7$ must be at least 1. Which inequality gives all possible values of x?

☐ A. $x \geq 2$
☐ B. $x \leq -2$
☐ C. $x \leq 2$
☐ D. $x \geq -2$

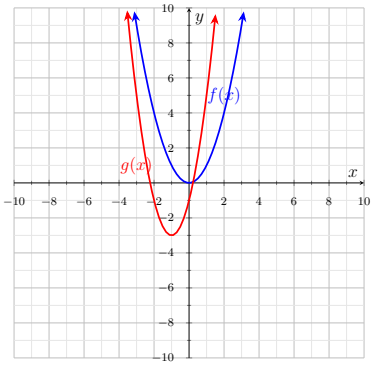
7) A linear system consists of two lines that have the same slope but *different* y-intercepts. How many solutions does the system have?

☐ A. No solution
☐ B. Exactly one solution
☐ C. Infinitely many solutions
☐ D. Exactly two solutions

8) 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 $x \to \pm\infty$.

9) The parent function is $f(x) = x^2$ and the transformed function $g(x)$ is shown in the graph below.



Describe the transformations applied to $f(x)$ to obtain $g(x)$.

☐ A. Shift right 1, reflect over x-axis, shift up 3

☐ B. Shift left 1, vertical stretch by 2, shift down 3

☐ C. Shift right 1, vertical stretch by 2, shift down 3

☐ D. Shift left 1, vertical compression by 2, shift up 3

10) A polynomial with real coefficients has leading coefficient 1 and roots 2 with multiplicity 2, -1, and $4 - i$. What is the smallest possible degree?

Record your answer in the space provided.