

Algebra 1
Solving Quadratics by Square Roots

Solving Quadratics by Square Roots | A1-U09-P08

96 problems · Four activity formats

01	Answer Bank Challenge	24 tasks
02	Grid Rounds	24 tasks
03	Match & Move	24 cards
04	Error Analysis & Strategy	24 tasks
05	Quick Answer Key	96 answers
06	Full Worked Solutions	96 solutions
07	Teacher / Parent Use Guide	included
08	Terms of Use & License	included

Topic focus
This topic is a focused set of 96 practice tasks on Solving Quadratics by Square Roots.
8 PDFs and a README; 51 buyer pages.

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Name: _____ Date: _____ Class: _____

Answer each question and record the matching bank letter. Give exact values. Give the whole requested response, including any reasoning the question asks for.

Solve over the real numbers and show both branches. Match the complete exact real solution set. Show the steps that isolate the square and include every real branch. Keep radicals exact. Solve $x^2 = 16$ over the real numbers. _____ Bank label: _____	How many distinct real solutions are there? Match the complete exact real solution set. Show the steps that isolate the square and include every real branch. Keep radicals exact. Solve $x^2 = 0$ over the real numbers. _____ Bank label: _____
Classify the real solution set before attempting a square root. Match the complete exact real solution set. Show the steps that isolate the square and include every real branch. Keep radicals exact. Solve $x^2 = -9$ over the real numbers. _____ Bank label: _____	Distinguish the principal square root from the equation solutions. Match the complete exact real solution set. Show the steps that isolate the square and include every real branch. Keep radicals exact. Solve $x^2 = 1$ over the real numbers. _____ Bank label: _____
List the complete real solution set. Match the complete exact real solution set. Show the steps that isolate the square and include every real branch. Keep radicals exact. Solve $x^2 = 49$ over the real numbers. _____ Bank label: _____	Use square-root branches to solve. Match the complete exact real solution set. Show the steps that isolate the square and include every real branch. Keep radicals exact. Solve $x^2 = 25$ over the real numbers. _____ Bank label: _____
Find and verify both roots. Match the complete exact real solution set. Show the steps that isolate the square and include every real branch. Keep radicals exact. Solve $x^2 = 100$ over the real numbers. _____ Bank label: _____	State both real roots rather than only the radical value. Match the complete exact real solution set. Show the steps that isolate the square and include every real branch. Keep radicals exact. Solve $x^2 = 4$ over the real numbers. _____ Bank label: _____

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Answer each question and show your reasoning in the workspace. Give exact values rather than decimals unless the question supplies a decimal. Give the whole requested response, including any reasoning the question asks for.

Determine the number of real roots. Solve $x^2 = -36$ over the real numbers. _____ _____	Classify the equation in the real domain. Solve $x^2 = -\frac{4}{9}$ over the real numbers. _____ _____
Decide whether any real branch exists. Solve $x^2 = -0.49$ over the real numbers. _____ _____	Use sign evidence to classify real solvability. Solve $x^2 = -\frac{121}{9}$ over the real numbers. _____ _____
Determine the real solution count. Solve $x^2 = -0.0001$ over the real numbers. _____ _____	Separate perfect-square magnitude from the sign classification. Solve $x^2 = -\frac{289}{64}$ over the real numbers. _____ _____

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Begin at START. Answer the card, then find the matching final answer at the top of another card. Use the recording sheet for your reasoning. Visit each card once and continue to FINISH.

Incoming: $x = -2$ or $x = 4$ Separate the outer operations from the final translation. Match the complete exact real solution set. Show the steps that isolate the square and include every real branch. Keep radicals exact. Solve $3(x + 4)^2 + 2 = 29$ over the real numbers. Your response: _____	Incoming: $x = -1$ or $x = 7$ Interpret the plus sign inside the square correctly. Match the complete exact real solution set. Show the steps that isolate the square and include every real branch. Keep radicals exact. Solve $(x + 5)^2 = 9$ over the real numbers. Your response: _____
Incoming: $x = -8$ or $x = -2$ Determine whether the branch notation creates distinct roots. Match the complete exact real solution set. Show the steps that isolate the square and include every real branch. Keep radicals exact. Solve $(x - 4)^2 = 0$ over the real numbers. Your response: _____	Incoming: $x = -\frac{17}{10}$ or $x = \frac{17}{10}$ Control the subtraction and the negative decimal divisor. Match the complete exact real solution set. Show the steps that isolate the square and include every real branch. Keep radicals exact. Solve $-0.8x^2 + 1.25 = -2.982$ over the real numbers. Your response: _____
Incoming: $x = -\frac{20}{9}$ or $x = \frac{20}{9}$ Find the common-denominator isolation and all real roots. Match the complete exact real solution set. Show the steps that isolate the square and include every real branch. Keep radicals exact. Solve $(\frac{7}{3})x^2 + \frac{5}{6} = \frac{599}{84}$ over the real numbers. Your response: _____	Incoming: $x = -\frac{19}{10}$ or $x = \frac{19}{10}$ Invert the fractional scale, then take square roots. Match the complete exact real solution set. Show the steps that isolate the square and include every real branch. Keep radicals exact. Solve $(\frac{81}{4})x^2 + 6 = 106$ over the real numbers. Your response: _____

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Evaluate the supplied statement or method. Say whether it is correct, repair it if it is not, and verify the result exactly. Not every prompt contains an error.

Isolate x squared before taking both square-root branches. Choose whether to remove the additive term before dividing by the square coefficient, or divide the whole equation by that nonzero coefficient first. Justify the cleaner arithmetic, then isolate the square and finish both branches as originally requested.

Solve $8x^2 + 3 = 53$ over the real numbers.

Preserve equality through both inverse operations and solve. Choose whether to remove the additive term before dividing by the square coefficient, or divide the whole equation by that nonzero coefficient first. Justify the cleaner arithmetic, then isolate the square and finish both branches as originally requested.

Solve $18x^2 - 7 = 91$ over the real numbers.

Determine whether the two sign branches remain distinct. Choose whether to remove the additive term before dividing by the square coefficient, or divide the whole equation by that nonzero coefficient first. Justify the cleaner arithmetic, then isolate the square and finish both branches as originally requested.

Solve $4x^2 + 13 = 13$ over the real numbers.

Track the negative coefficient while isolating the square. Choose whether to remove the additive term before dividing by the square coefficient, or divide the whole equation by that nonzero coefficient first. Justify the cleaner arithmetic, then isolate the square and finish both branches as originally requested.

Solve $-25x^2 + 8 = -56$ over the real numbers.

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Full Worked Solutions - excerpt

Worked example

Problem. Isolate the middle squared term, then branch.

Solve $7 - 2(x - 4)^2 = 5$ over the real numbers.

Answer. branches: $x - 4 = \pm 1$; center: 4; radius squared: 1; real solution count: 2; solutions: 3, 5

Explanation and check.

Subtract 7 and divide by -2 to find $(x - 4)^2 = 1$. Therefore x is 3 or 5.

Worked example

Problem. Determine the number of real roots.

Solve $x^2 = -36$ over the real numbers.

Answer. isolated square value: -36 ; real solution count: 0; No real solutions

Explanation and check.

Because x squared is at least zero for every real x , there are no real roots.