

Algebra 2 - Solving Quadratic Equations - Worksheet

Common Core A-REI.B.4a, A-REI.B.4b · maths-pdf.fr/en/

Name: _____ Class: _____ Date: ____/____/____

These 20 problems practice solving quadratic equations (Common Core A-REI.B.4a and A-REI.B.4b). The first problems check square roots and factoring, the middle problems add completing the square, the quadratic formula, and the discriminant, and the last six are word problems and multi-step tasks that need area and projectile word problems with a check for reasonable solutions.

Work in order and show every step. Write each answer in simplest form, and open the answer key only after you have tried the problem yourself.

Algebra 2 · Common Core State Standards: **A-REI.B.4a, A-REI.B.4b**

Exercise 1 - Square roots

Solve $x^2 = 49$.

Exercise 2 - Isolate the square

Solve $3x^2 - 75 = 0$.

Exercise 3 - Square of a binomial

Solve $(x-4)^2 = 36$.

Exercise 4 - Irrational solutions

Solve $(x+2)^2 = 11$.

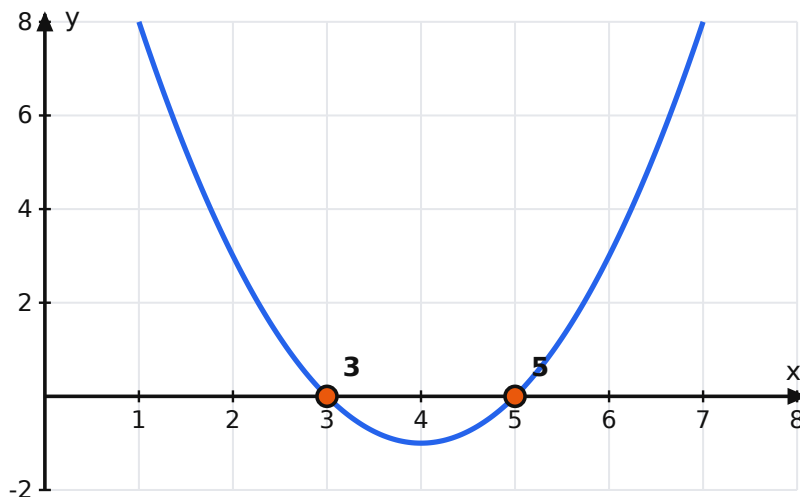
Exercise 5 - Factor and solve

Solve by factoring: $x^2 - 3x - 10 = 0$.

Exercise 6 - Factor, a = 2

Solve by factoring: $2x^2 + 7x - 4 = 0$.

Exercise 7 - Factoring and the graph



$$y = x^2 - 8x + 15.$$

Solve $x^2 - 8x + 15 = 0$ by factoring and compare with the x-intercepts on the graph.

Exercise 8 - Complete the square, integer

Solve by completing the square: $x^2 + 6x - 7 = 0$.

Exercise 9 - Complete the square, irrational

Solve by completing the square: $x^2 - 4x - 3 = 0$.

Exercise 10 - Complete the square, odd b

Solve by completing the square: $x^2 + 5x + 3 = 0$.

Exercise 11 - Quadratic formula, rational

Solve $3x^2 - 5x - 2 = 0$ with the quadratic formula.

Exercise 12 - Quadratic formula, radicals

Solve $2x^2 + 4x - 3 = 0$. Simplify the radical and the fraction.

Exercise 13 - Complex solutions

Solve $x^2 + 2x + 5 = 0$.

Exercise 14 - Discriminants

Equation	$D = b^2 - 4ac$	Type
$x^2 - 4x + 4 = 0$	?	?
$x^2 + x + 1 = 0$	?	?
$2x^2 - 5x - 3 = 0$	?	?

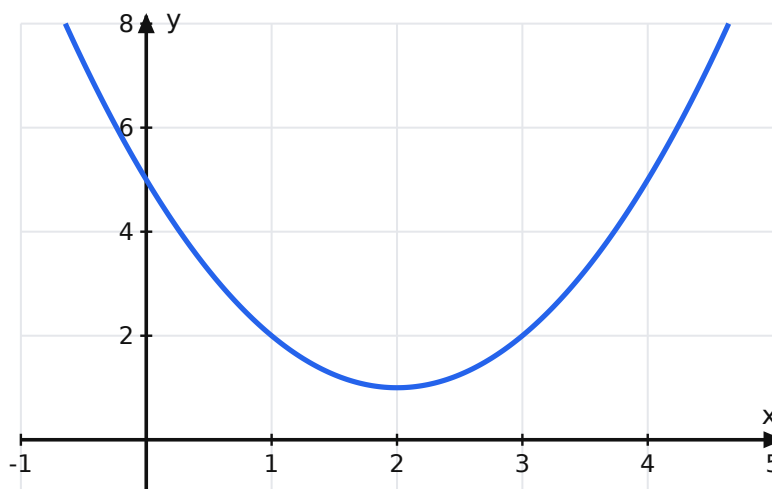
Complete the table.

Find the discriminant of each equation and state the number and type of solutions.

Exercise 15 - Find k

Find the values of k for which $x^2 + kx + 9 = 0$ has exactly one real solution.

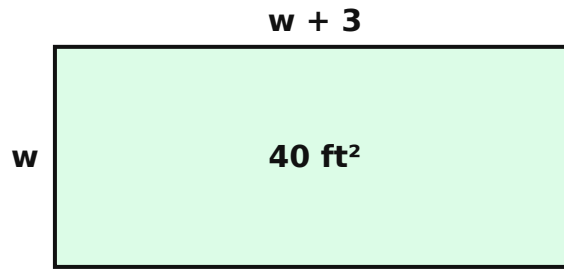
Exercise 16 - No real solutions



$$y = x^2 - 4x + 5.$$

The graph of $y = x^2 - 4x + 5$ is shown. Explain why $x^2 - 4x + 5 = 0$ has no real solutions, then find the complex solutions.

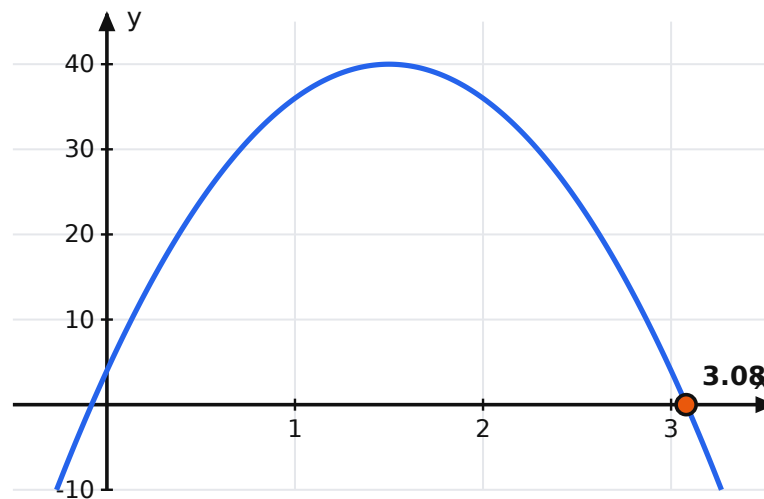
Exercise 17 - Garden



A rectangle with area 40 square feet.

Priya's rectangular garden is 3 feet longer than it is wide, and its area is 40 square feet. Find its dimensions.

Exercise 18 - Ball hits the ground



$$h(t) = -16t^2 + 48t + 4.$$

A ball's height in feet is $h(t) = -16t^2 + 48t + 4$. Find when it hits the ground (when $h = 0$). Give the answer in exact form and rounded to the nearest hundredth.

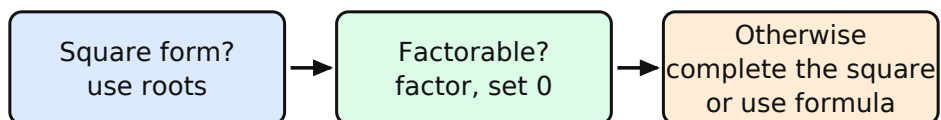
Exercise 19 - Break-even

A club's profit is $P(x) = -x^2 + 12x - 20$ dollars for x tickets sold (in tens). Find the break-even points where $P = 0$.

Exercise 20 - Find the error

Aisha solved $x(x-2) = 8$ by writing $x = 8$ or $x - 2 = 8$. Explain the error and solve correctly.

Exercise 21 - Choose a method



Choose a method.

Solve $x^2+14x+49=0$ using any method and say how many solutions there are.