

Algebra 1 · Solving Quadratic Equations · Test

Common Core A-REI.B.4a, A-REI.B.4b, A-APR.B.3, A-CED.A.1 · mathovore.fr

Name: _____ Date: ____/____/____ Score: _____

This test covers solving quadratic equations and modeling with them, Common Core A-REI.B.4 and A-CED.A.1. It has nine questions worth 20 points. A calculator is allowed. Show all work for full credit.

Test information

- **Grade:** Algebra 1
- **Chapter:** Solving Quadratic Equations
- **Common Core:** A-REI.B.4a, A-REI.B.4b, A-APR.B.3, A-CED.A.1
- **Time:** 45 minutes
- **Total:** 20 points (Question 1: 2 pts; Question 2: 2 pts; Question 3: 3 pts; Question 4: 3 pts; Question 5: 2 pts; Question 6: 3 pts; Question 7: 2 pts; Question 8: 2 pts; Question 9: 1 pt)

Question 1: Square roots (2 points)

Solve each equation.

- $3x^2 = 48$ (1 point)
- $(x+1)^2 = 25$ (1 point)

Question 2: Factoring (2 points)

Solve each equation.

- $x^2 + 3x - 40 = 0$ (1 point)
- $3x^2 - x - 2 = 0$ (1 point)

Question 3: Complete the square (3 points)

Solve $x^2 + 6x - 2 = 0$ by completing the square. Give exact solutions, then round to the nearest hundredth.

Question 4: Quadratic formula (3 points)

Solve $2x^2 - 3x - 4 = 0$ using the quadratic formula. Give exact solutions, then round to the nearest hundredth.

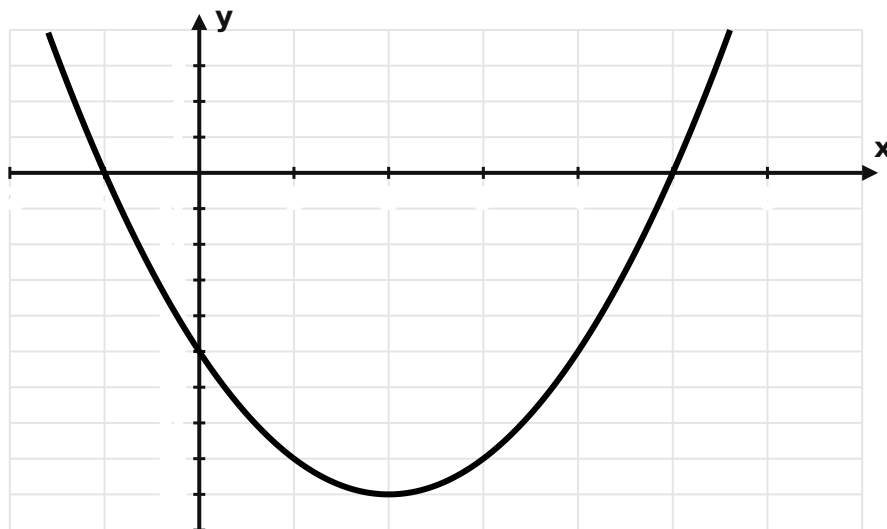
Question 5: Discriminant (2 points)

Answer each part.

- a. Find the discriminant of $3x^2 - 6x + 4 = 0$ and state how many real solutions it has. (1 point)
- b. Find the value of k for which $x^2 - 8x + k = 0$ has exactly one real solution. (1 point)

Question 6: Use a graph (3 points)

The graph of $y = x^2 - 4x - 5$ is shown.

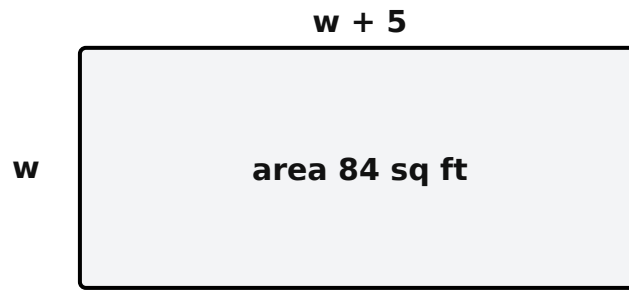


Graph of $y = x^2 - 4x - 5$.

- a. Use the graph to solve $x^2 - 4x - 5 = 0$. (1 point)
- b. Name the vertex and the axis of symmetry. (1 point)
- c. For which values of x is $y < 0$? (1 point)

Question 7: Rectangle (2 points)

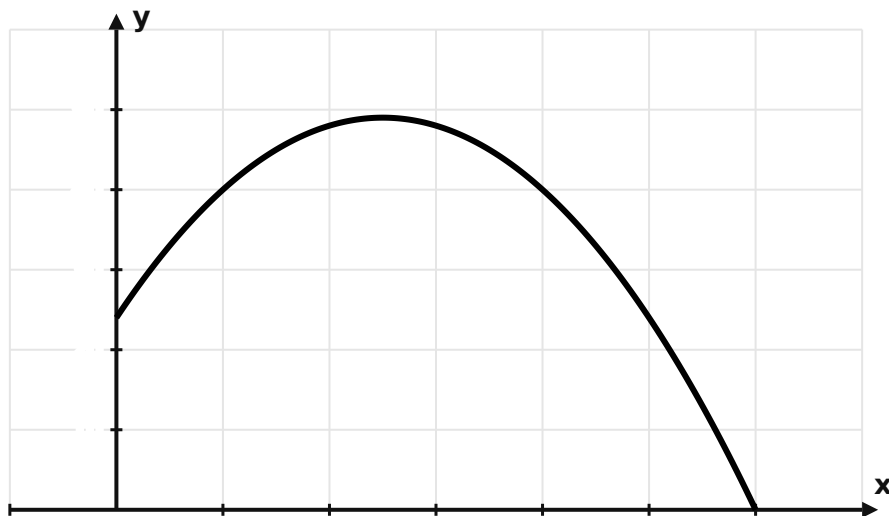
A rectangular banner is 5 feet longer than it is wide, and its area is 84 square feet. Find its width and length.



Rectangle model for the problem.

Question 8: Ball flight (2 points)

A ball is hit upward and its height in feet after t seconds is $h(t) = -16t^2 + 40t + 24$. The graph is shown.



Height of a ball (feet) against time (seconds).

- After how many seconds does the ball hit the ground? (1 point)
- Explain why one solution of the equation is not used. (1 point)

Question 9: No real solution (1 point)

A student says that $x^2 = -9$ has the solutions $x = 3$ and $x = -3$. Explain the error.