

Algebra 1 · Graphing Quadratic Functions · Test

Common Core F-IF.C.7a, F-IF.C.8a, F-IF.B.4, A-SSE.B.3b · mathovore.fr

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

This test checks graphing quadratic functions and interpreting their features, Common Core F-IF.C.7a and F-IF.B.4. It has nine questions worth 20 points in total. Calculators are allowed. Show all work for full credit.

Test information

- **Grade:** Algebra 1
- **Chapter:** Graphing Quadratic Functions
- **Common Core:** F-IF.C.7a, F-IF.C.8a, F-IF.B.4, A-SSE.B.3b
- **Time:** 45 minutes
- **Total:** 20 points (Question 1: 2 pts; Question 2: 2 pts; Question 3: 2 pts; Question 4: 3 pts; Question 5: 2 pts; Question 6: 2 pts; Question 7: 3 pts; Question 8: 2 pts; Question 9: 2 pts)

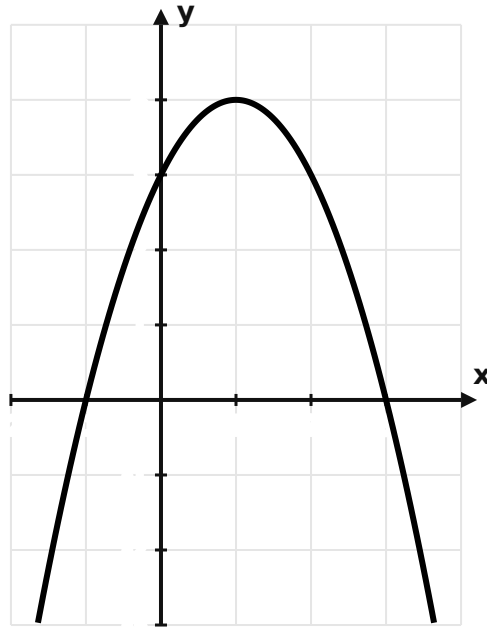
Question 1: Features from standard form (2 points)

Consider $f(x) = 2x^2 - 8x + 6$.

- Does the parabola open up or down? Find the y-intercept. (1 point)
- Find the axis of symmetry and the vertex. (1 point)

Question 2: Read a graph (2 points)

The graph of a quadratic function is shown.



Graph for the question.

- Name the vertex and the axis of symmetry. (1 point)
- Name the x-intercepts and the y-intercept. (1 point)

Question 3: Factored form (2 points)

The function $g(x) = (x+1)(x-5)$ is given.

- Find the x-intercepts and the axis of symmetry. (1 point)
- Find the vertex. (1 point)

Question 4: Complete the square (3 points)

Rewrite $h(x) = x^2 + 10x + 16$ in vertex form. Give the vertex and the zeros of h .

Question 5: Change the form (2 points)

A function is $y = -2(x-1)^2 + 8$.

- Write it in standard form. (1 point)
- Write it in factored form. (1 point)

Question 6: Compare two functions (2 points)

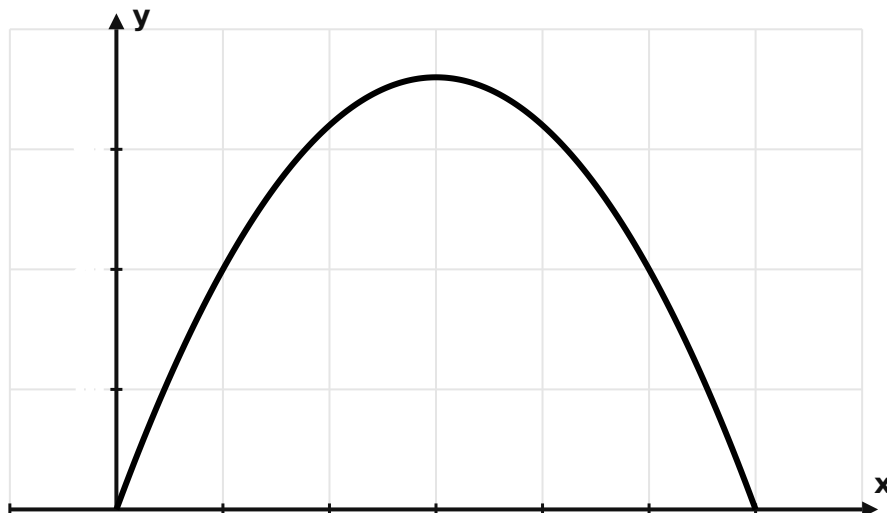
A function q is shown in the table, and $r(x) = x^2 + 2x - 5$.

x	-1	0	1	2	3	4	5
$q(x)$	7	2	-1	-2	-1	2	7

- Name the vertex and the axis of symmetry of q . (1 point)
- Which function has the smaller minimum value? (1 point)

Question 7: Kicked ball (3 points)

Jamal kicks a ball. Its height in feet after t seconds is $h(t) = -16t^2 + 48t$, as the graph shows.

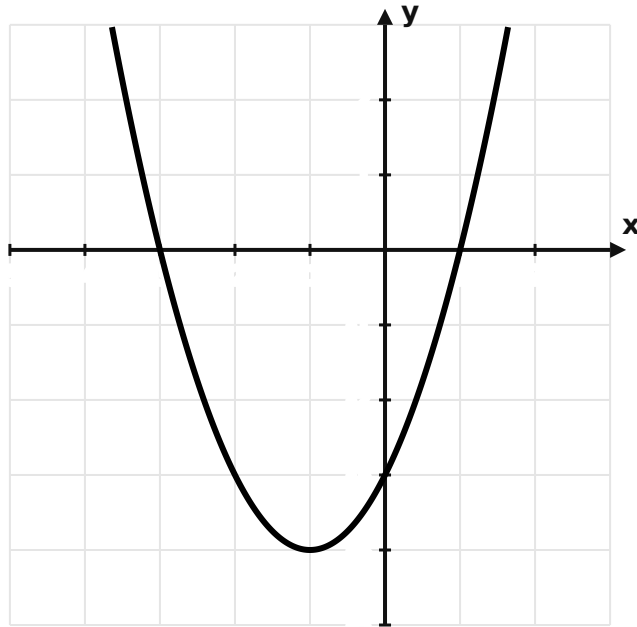


Height h (feet) of a kicked ball after t seconds.

- Find the maximum height and the time when it happens. (1 point)
- After how many seconds does the ball hit the ground? (1 point)
- Find the height after 1 second. (1 point)

Question 8: Intervals of a function (2 points)

The graph of f is shown.



Graph of a function f .

- On which interval is f decreasing? (1 point)
- For which values of x is $f(x) < 0$? (1 point)

Question 9: Pen with fence (2 points)

Sofia has 60 feet of fence for a rectangular pen against a barn wall, so only three sides need fence. Each of the two sides that touch the wall has length x .

- Write the area as a function of x . (1 point)
- Find the largest possible area. (1 point)