

Quadratic Functions Formative Quiz

Time: 25 min. 6 questions.

Instructions

Answer each question in the space provided. Show all algebraic work for short answer and numeric questions, since partial credit depends on correct method. Where a question asks for a specific form (vertex, standard, factored), write your final answer in that form.

Questions

1. For the quadratic function $y = -2(x + 4)^2 - 3$, state the coordinates of the vertex.

- A) (4, -3)
- B) (-4, -3)
- C) (-4, 3)
- D) (4, 3)

[\(Outcome\)](#)

2. Determine the axis of symmetry and the direction of opening for the quadratic function $y = 3x^2 - 12x + 7$. Show the algebraic steps you use to find the axis of symmetry.

[\(Outcome\)](#)

3. True or false: The trinomial $6x^2 + x - 2$ factors as $(3x - 2)(2x + 1)$.

[\(Outcome\)](#)

4. The quadratic equation $x^2 - 7x + 12 = 0$ has two roots. Compute the value of the larger root.

[\(Outcome\)](#)

5. For the quadratic function $y = (x - 2)^2 + 5$, state the range of the function.

- A) $y \geq 5$
- B) $y \leq 5$
- C) $x \geq 2$
- D) All real numbers

[\(Outcome\)](#)

6. Determine the x-intercepts of the quadratic function $y = x^2 - x - 6$ algebraically. State your answer as ordered pairs.

[\(Outcome\)](#)

Curriculum coverage

Question	Outcome alias
1	Outcome
2	Outcome
3	Outcome
4	Outcome

5	Outcome
6	Outcome

Answer key

1. B) $(-4, -3)$. In vertex form $y = a(x - p)^2 + q$, the vertex is (p, q) ; here $p = -4$ and $q = -3$.
2. Axis of symmetry $x = 2$, opening downward is incorrect since $a = 3 > 0$, so the parabola opens upward. Completing the square gives $y = 3(x - 2)^2 - 5$, so the axis of symmetry is $x = 2$ and the parabola opens upward.
3. False. Expanding $(3x - 2)(2x + 1)$ gives $6x^2 + 3x - 4x - 2 = 6x^2 - x - 2$, which does not match $6x^2 + x - 2$.
4. 4. Factoring $x^2 - 7x + 12 = 0$ gives $(x - 3)(x - 4) = 0$, so the roots are $x = 3$ and $x = 4$, and the larger root is 4.
5. A) $y \geq 5$. Since $a = 1 > 0$, the parabola opens upward with minimum value $q = 5$ at the vertex, so the range is $y \geq 5$.
6. $(3, 0)$ and $(-2, 0)$. Factoring $x^2 - x - 6$ gives $(x - 3)(x + 2) = 0$, so $x = 3$ or $x = -2$, giving $y = 0$ at both values.