

Quadratic Functions Formative Quiz

Time: 30 min. 6 questions.

Instructions

Answer all six questions in the space provided or on separate paper, showing your work for the short answer and numeric items. Calculators are permitted for numeric computation, but algebraic steps should be recorded for full credit.

Questions

- For the quadratic function $y = 2(x - 3)^2 + 5$, what is the vertex?
A) (3, 5)
B) (" 3, 5)
C) (3, " 5)
D) (2, 3)
([Outcome](#))
- Determine the sum of the roots of the quadratic equation $x^2 - 7x + 10 = 0$. State this sum as a single number.
([Outcome](#))
- For the function $y = 3x^2 - 12x + 7$, state the equation of the axis of symmetry.
([Outcome](#))
- True or false: For the quadratic function $y = -4(x + 1)^2 - 2$, the parabola opens upward.
([Outcome](#))
- A system consists of one linear equation and one quadratic equation in two variables, solved algebraically or graphically. What is the maximum number of real solutions this system can have?
A) 0
B) 1
C) 2
D) 4
([Outcome](#))
- State the domain and range of the quadratic function $y = -2(x - 4)^2 + 9$.
([Outcome](#))

Curriculum coverage

Question	Outcome alias
1	Outcome
2	Outcome
3	Outcome
4	Outcome
5	Outcome
6	Outcome

Answer key

1. A) (3, 5). In vertex form $y = a(x - p)^2 + q$, the vertex is (p, q), so with $p = 3$ and $q = 5$ the vertex is (3, 5).
2. 7. For $x^2 - 7x + 10 = 0$, the sum of the roots equals $-b/a = -(-7)/1 = 7$, which can be confirmed by factoring to $(x - 2)(x - 5) = 0$, giving roots 2 and 5 that sum to 7.
3. $x = 2$. The axis of symmetry for $y = ax^2 + bx + c$ is $x = -b/(2a)$, so $x = -(-12)/(2 \times 3) = 12/6 = 2$.
4. False. Since $a = -4$ is negative, the parabola opens downward, not upward.
5. C) 2. A line can intersect a parabola at most twice, so the system has a maximum of two real solutions.
6. Domain: all real numbers ($x \in \mathbb{R}$). Range: $y \leq 9$. Since $a = -2$ is negative, the parabola opens downward from the vertex (4, 9), so y takes all values at or below the maximum value of 9.