Name: Date:
Scarsdale Middle School Popham House Mr. Weiss

Quiz: Parabolas and Quadratics – Level Three

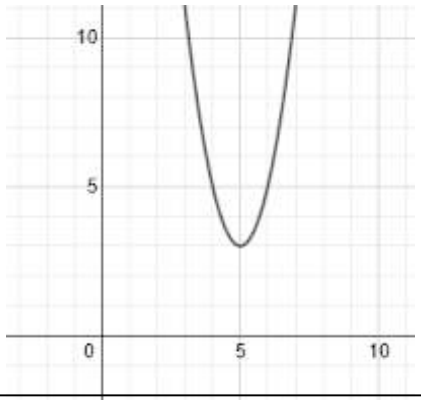
---

1) What is the equation of the axis of symmetry of the graph of the function: $g(x) = -2x^2 - 20x + 13$?
2) What is the range of the function?

Show Work Algebraically

---

3) What is the equation of the axis of symmetry of the parabola shown?



4) (*MC*) How many roots (zeros) does this quadratic function have?

A) 0 B) 1 C) 2 D) 3

(5-9) Answer the questions based on the quadratic function shown in the table. Assume the domain is all real numbers.

x	*y*
0	8
1	3
2	0
3	–1
4	0
5	3
6	8

5) What are the zeros? 6) What is the y-intercept?

7) What are the coordinates of the vertex?

8) Circle the correct bold words in the sentence below:

The sign of the leading coefficient (*a* value) is **positive / negative** because the vertex is a **min / max**

9) Based on your answer to question 7 and 8, what is the range?

(10-16) Solve for x

10) $4x^2 - 81 = 0$

11) $x^2 - 3x - 18 = 0$

12) $x^3 - 9x = 0$

13) $10x^2 + 100x + 210 = 0$

14) $6x^2 = 17x - 12$

15) $\frac{x}{2} = \frac{10}{x - 8}$

16) $(2x + 5)^2 - 3x(x - 10) = 300$

---

17) One of the roots of a quadratic function is 4.8. The equation of the axis of symmetry is $x = -10.3$. What is the other root?

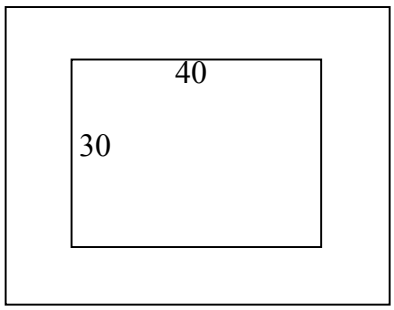
---

18) The length of a rectangle is four times its width. If the length is increased by 3, and the width is decreased by 1, the area of the new rectangle is 30. Find the dimensions of the original rectangle. *Show a diagram and an algebraic solution.*

19) Find three consecutive positive even integers such that the square of the largest plus 5 times the middle is equal to 56 more than twice the square of the smallest.
Show a let statement and an algebraic solution.

---

20) A garden is 40 feet long and 30 feet wide. It is surrounded by a walkway of uniform width. The area of the walk itself is 624 ft^2. Find the width of the walk. *Show an algebraic solution.*



21) Write an equation of the line that is parallel to the line with equation $y - 4x = 5$ and that passes through the vertex of the parabola $y = x^2 + 7x + 14$.

Bonus:

Write a quadratic equation that has roots of: $6 \pm 2\sqrt{5}$.