

Mid-Chapter Quiz



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Do you know HOW?

Order each group of quadratic functions from widest to narrowest graph.

1. $y = 2x^2$, $y = 0.5x^2$, $y = -x^2$

2. $f(x) = 4x^2$, $f(x) = \frac{2}{3}x^2$, $f(x) = 3x^2$

3. $f(x) = 0.6x^2$, $f(x) = 0.3x^2$, $f(x) = 0.2x^2$

4. $y = -2x^2$, $y = x^2$, $y = -0.25x^2$

Graph each function. Label the axis of symmetry and the vertex.

5. $y = \frac{1}{2}x^2$

6. $y = -2x^2 - 1$

7. $y = 3x^2 - 6x$

8. $y = x^2 + 2x + 4$

9. $y = -0.5x^2 + 2x + 1$

Solve each equation by graphing the related function. If the equation has no real-number solution, write *no solution*.

10. $x^2 - 16 = 0$

11. $x^2 + 9 = 0$

12. $0.25x^2 = 0$

Solve each equation by finding square roots. If the equation has no real-number solution, write *no solution*.

13. $m^2 = 81$

14. $t^2 - 7 = -18$

15. $5r^2 - 180 = 0$

16. $36n^2 = 9$

17. **Sewing** You have 324 ft² of fabric to make a circular play parachute for kids. What is the radius of the largest parachute you could make? Round to the nearest tenth of a foot.

Solve by factoring.

18. $b^2 + 3b - 4 = 0$

19. $n^2 + n - 12 = 0$

20. $2x^2 - 5x - 3 = 0$

21. $t^2 - 3t = 28$

22. $3n^2 = 6n$

STEM

23. **Construction** You are building a rectangular planter for your school garden. You want the area of the bottom to be 90 ft². You want the length of the planter to be 3 ft longer than twice its width. What should the dimensions of the bottom of the planter be?

Do you UNDERSTAND?

24. **Writing** Describe the steps you would use to graph the function $y = 2x^2 + 5$.
25. **Reasoning** Does the value of c in the quadratic function $y = ax^2 + bx + c$ affect the horizontal position of the vertex of the graph? Explain why or why not.
26. **Writing** Describe how the graph of $y = 3x^2$ differs from the graph of $y = x^2$.
27. **Open-Ended** Give an example of a quadratic function that matches each description.
27. The axis of symmetry is to the left of the y -axis.
28. Its graph lies entirely below the x -axis.
29. Its graph opens upward and has its vertex at $(0, 0)$.
30. a. Solve $x^2 - 4 = 0$ and $2x^2 - 8 = 0$ by graphing their related functions.
b. **Reasoning** Why does it make sense that the graphs have the same x -intercepts?