



Puzzle Time

What Is The Difference Between An Elbow And A Rabbit's Telephone?

| | | | | | |
|---|---|---|---|---|---|
| A | B | C | D | E | F |
| G | H | I | J | K | L |

Complete each exercise. Find the answer in the answer column. Write the word under the answer in the box containing the exercise letter.

| |
|-----------------------------------|
| 0 minimum THE |
| 2 maximum BONE |
| $(-1, -9.5)$ $x = -1$ A |
| $f(x) = -2(x + 1)^2 - 1$ PHONE |
| $f(x) = x^2 - 2$ IS |
| $(1, -4)$ $x = 1$ IS |

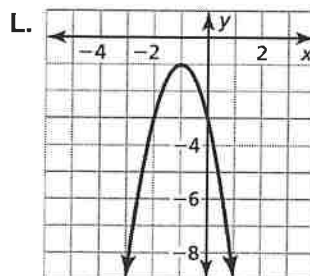
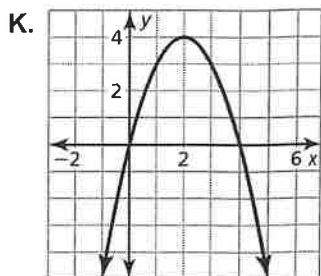
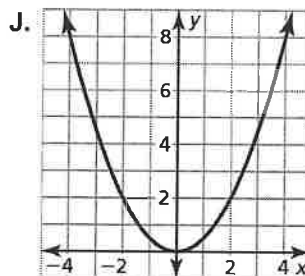
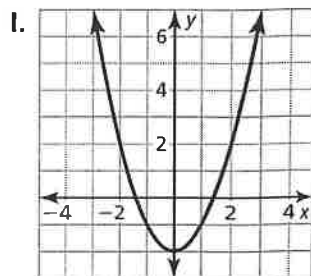
Find the vertex and axis of symmetry of the function.

- A. $f(x) = 9x^2 - 3$ B. $y = -x^2 + 2x - 5$
 C. $g(x) = -0.5x^2 - x - 10$ D. $f(x) = -2x^2 + 8x - 1$

Find the minimum value or maximum value of the function.

- E. $f(x) = -3x^2 + 12x - 10$ F. $y = -x^2 + 8$
 G. $g(x) = x^2 - 2x + 1$ H. $y = 2x^2 - 20x$

Match the graph with its function.



| |
|------------------------------------|
| 8 maximum AND |
| $f(x) = -(x - 2)^2 + 4$ BUNNY'S |
| -50 minimum OTHER |
| $f(x) = \frac{1}{2}x^2$ A |
| $(0, -3)$ $x = 0$ ONE |
| $(2, 7)$ $x = 2$ FUNNY |

2.2 Extra Practice

In Exercises 1–12, graph the function. Label the vertex and axis of symmetry.

- $f(x) = -3(x - 2)^2 - 4$
- $f(x) = 3(x + 1)^2 + 5$
- $g(x) = -\frac{1}{2}(x + 3)^2 + 2$
- $h(x) = \frac{1}{2}(x - 2)^2 - 1$
- $y = 0.6(x - 2)^2$
- $f(x) = 0.25x^2 - 1$
- $y = -x^2 + 8$
- $y = 7x^2 + 2$
- $y = 1.5x^2 - 6x + 3$
- $f(x) = 0.5x^2 + 3x - 1$
- $y = \frac{5}{2}x^2 - 5x + 1$
- $f(x) = -\frac{3}{2}x^2 - 6x - 4$

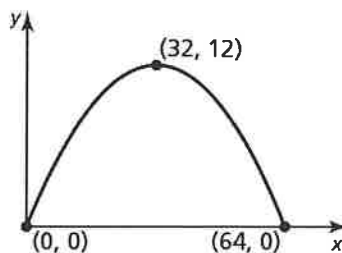
In Exercises 13–16, find the minimum value or maximum value of the function. Find the domain and range of the function, and where the function is increasing and decreasing.

- $y = 3x^2 + 12$
- $y = -x^2 - 6x$
- $y = -\frac{1}{3}x^2 - 2x + 3$
- $f(x) = \frac{1}{2}x^2 + 3x + 7$
- A quadratic function is decreasing when $x < 3$ and increasing when $x > 3$. Will the vertex be the highest or lowest point on the graph of the parabola? Explain.

In Exercises 18 and 19, graph the function. Label the x -intercept(s), vertex, and axis of symmetry.

- $f(x) = -\frac{1}{2}(x + 7)(x + 3)$
- $g(x) = 2(x - 1)^2$

- A football player practices kicking footballs. The parabola shows the path of the first kick, where x is the horizontal distance (in yards) and y is the corresponding height (in yards). The path of the second kick is modeled by the function $f(x) = -0.015x(x - 60)$. Which kick travels farther before hitting the ground?



- The graph of which function has the same axis of symmetry as the graph of $y = 2x^2 - 8x + 3$? Explain your reasoning.
 - $y = -4x^2 + 16x - 5$
 - $y = 2x^2 + 8x + 7$
 - $y = 3x^2 - 6x + 7$
 - $y = -6x^2 + 10x - 1$