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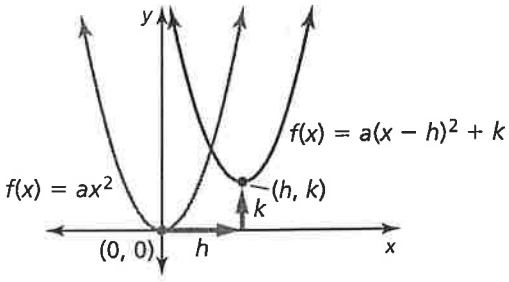
8.4 Notetaking with Vocabulary (continued)

Graphing $f(x) = a(x - h)^2 + k$

The **vertex form** of a quadratic function is $f(x) = a(x - h)^2 + k$, where $a \neq 0$. The graph of $f(x) = a(x - h)^2 + k$ is a translation h units horizontally and k units vertically of the graph of $f(x) = ax^2$.



The vertex of the graph of $f(x) = a(x - h)^2 + k$ is (h, k), and the axis of symmetry is $x = h$.

Notes:

Extra Practice

In Exercises 1–4, determine whether the function is *even*, *odd*, or *neither*.

1. $f(x) = 5x$

2. $f(x) = -4x^2$

3. $h(x) = \frac{1}{2}x^2$

4. $f(x) = -3x^2 + 2x + 1$

In Exercises 5–8, find the vertex and the axis of symmetry of the graph of the function.

5. $f(x) = 5(x - 2)^2$

6. $f(x) = -4(x + 8)^2$

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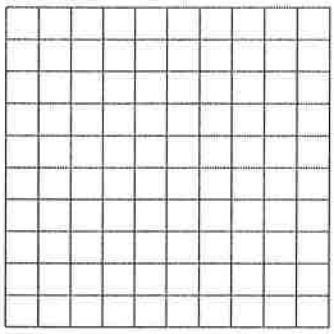
8.4 Notetaking with Vocabulary (continued)

7. $p(x) = -\frac{1}{2}(x - 1)^2 + 4$

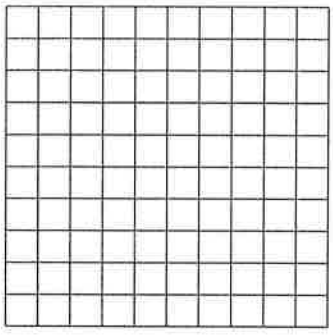
8. $g(x) = -(x + 1)^2 - 5$

In Exercises 9 and 10, graph the function. Compare the graph to the graph of $f(x) = x^2$.

9. $m(x) = 3(x + 2)^2$

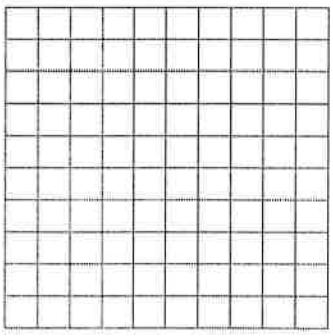


10. $g(x) = -\frac{1}{4}(x - 6)^2 + 4$



In Exercises 11 and 12, graph g.

11. $f(x) = 3(x + 1)^2 - 1; g(x) = f(x + 2)$



12. $f(x) = \frac{1}{2}(x - 3)^2 - 5; g(x) = -f(x)$