

Section 1.5 Translations of Functions

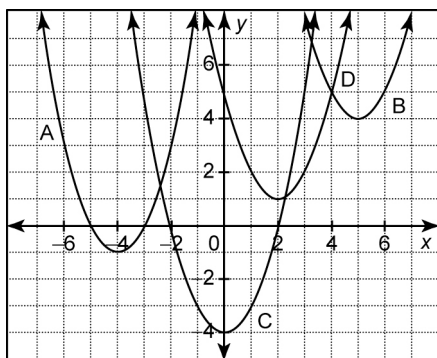
1. Match each equation to the corresponding graph.

a) $f(x) = (x - 2)^2 + 1$

b) $g(x) = (x + 4)^2 - 1$

c) $h(x) = (x - 5)^2 + 4$

d) $k(x) = x^2 - 4$



2. Write an equation for the graph resulting from each transformation.
- The graph of $f(x) = x^2$ is translated 2 units to the right.
 - The graph of $g(x) = x^2$ is translated 2 units up.
 - The graph of $p(x) = x^2$ is translated 3 units to the left.
 - The graph of $q(x) = x^2$ is translated 3 units down.
3. Write the coordinates of the vertex in each graph. Then, sketch the graph.
- $f(x) = x^2 - 9$
 - $g(x) = (x + 2)^2$
 - $h(x) = (x + 1)^2 + 4$
 - $k(x) = (x - 2)^2 - 4$
4. Write the coordinates of the vertex in each graph.
- $f(x) = x^2 - 16$
 - $g(x) = (x + 1)^2$
 - $h(x) = (x + 2)^2 + 3$
 - $k(x) = (x - 4)^2 - 1$
5. a) Sketch the graphs for the functions $y = x^2 - 2$, $y = x^2 - 3$, and $y = x^2 - 6$ on the same set of axes.
- b) Each of the three functions in part a) is translated 2 units to the left. What are the new equations of the functions?
- c) Each of the three functions in part a) is translated 2 units to the right. What are the new equations of the functions?
6. The x -intercepts of a parabola that opens upward are -4 and -2 .
- What is the x -coordinate of the vertex?
 - Find the equation of the parabola in the form $p(x) = (x - h)^2 + k$.
7. The x -intercepts of a parabola that opens upward are 2 and 6.
- What is the x -coordinate of the vertex?
 - Find the equation of the parabola in the form $p(x) = (x - h)^2 + k$.
8. The x -intercepts of a parabola that opens upward are -3 and -7 .
- What is the x -coordinate of the vertex?
 - Find the equation of the parabola in the form $p(x) = (x - h)^2 + k$.
9. Two identical dragsters are ready to start a race. One gives the other a 3-s head start. How are the position-time graphs for the two dragsters alike? How are they different?