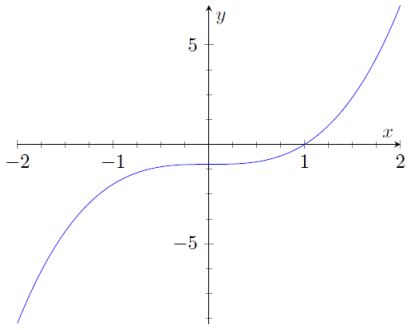
Transformations of Graphs

Learning Objectives

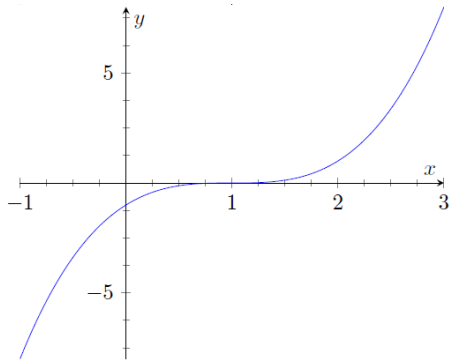
- Graph functions using vertical and horizontal shifts
- Graph functions using reflections about the x-axis and the y-axis
- Graph functions using compressions and stretches

Graph functions using vertical and horizontal shifts

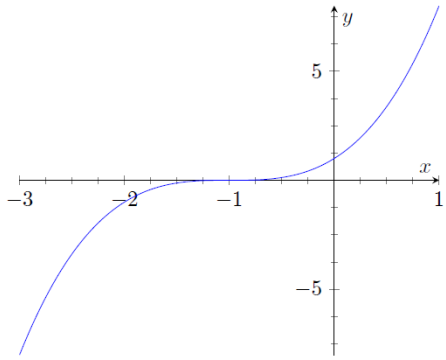
1. Identify the graph of the function that shifts the $y = x^3$ function one unit to the left. Write the equation of the transformation.

A. 

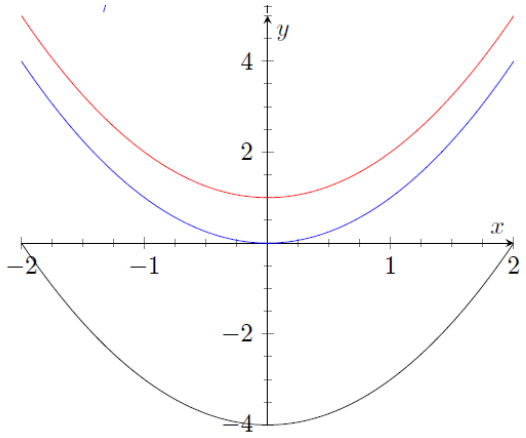
B.



C.

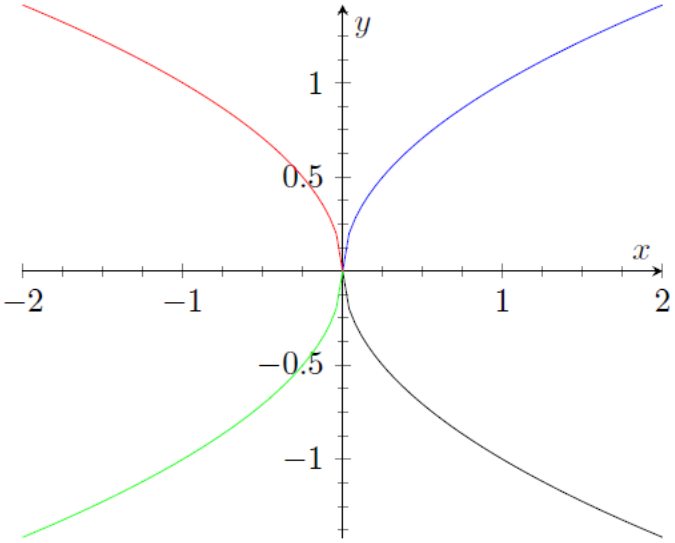


2. Which of the three functions shown on the graph below correspond to the graph of $f(x) = x^2 - 4$. Describe the transformation.



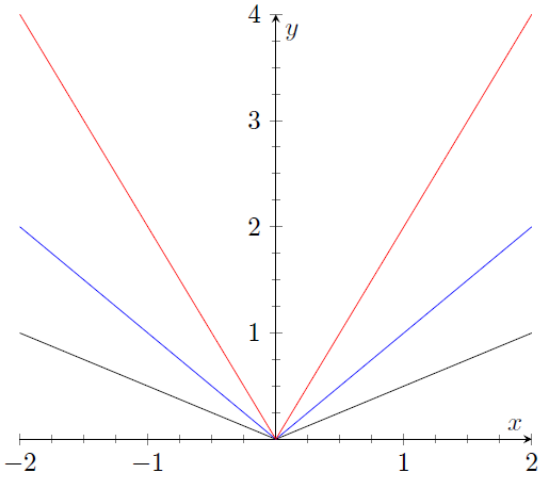
Graph functions using reflections about the x-axis and the y-axis

3. Identify the graph of the function below that transforms the graph of $y = \sqrt{x}$ by reflecting it across the x-axis. Write the equation of the function.

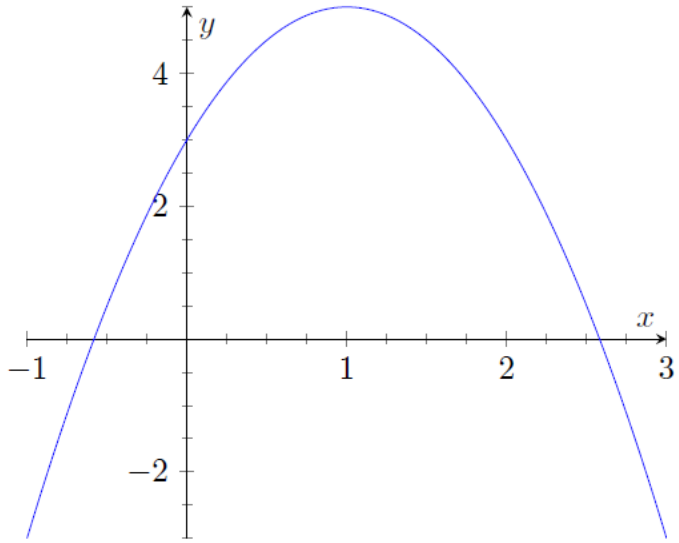


Graph functions using compressions and stretches

4. Which of the graphs below corresponds to the function $g(x) = 2|x|$. Describe the transformation.



5. The graph below has applied several transformations. Identify the transformations and write the equation of the graph using transformations.



ANSWER KEY

1. C., $f(x) = (x + 1)^3$
2. black line (bottom), vertical shift down 4
3. $f(x) = -\sqrt{x}$, black line (Quadrant IV)
4. red line (top), vertical stretch by 2
5. $f(x) = -2(x - 1)^2 + 5$, horizontal shift right 1, reflect across the x-axis, vertical stretch by 2, vertical shift up by 5