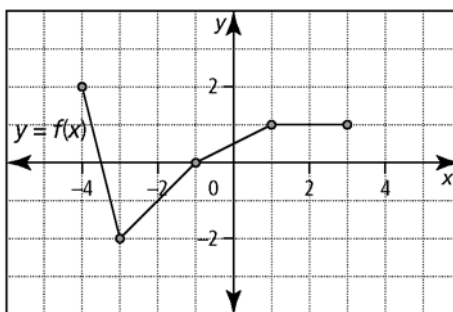


- The graph $y = f(x)$ contains the point $(3, 4)$. After a transformation, the point $(3, 4)$ is transformed to $(5, 5)$. Which of the following is a possible equation of the transformed function?
A $y + 1 = f(x + 2)$ **B** $y + 1 = f(x - 2)$ **C** $y - 1 = f(x + 2)$ **D** $y - 1 = f(x - 2)$
- The graph of $y = |x|$ is transformed by a vertical stretch by a factor of 3 about the x -axis, and then a horizontal translation of 3 units left and a vertical translation up 1 unit. Which of the following points is on the transformed function?
A $(0, 0)$ **B** $(1, 3)$ **C** $(-3, 1)$ **D** $(3, 1)$
- Which of the following transformations would produce a graph with the same x -intercepts as $y = f(x)$?
A $y = -f(x)$ **B** $y = f(-x)$ **C** $y = f(x + 1)$ **D** $y = f(x) + 1$
- Given the graph of $y = f(x)$, what is the invariant point under the transformation $y = f(-2x)$?



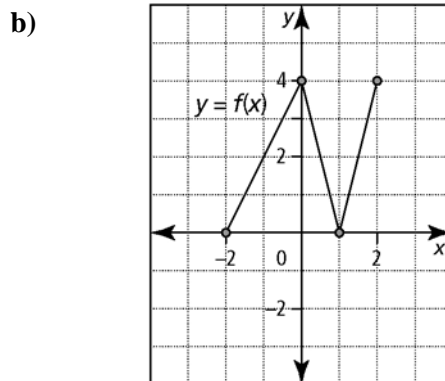
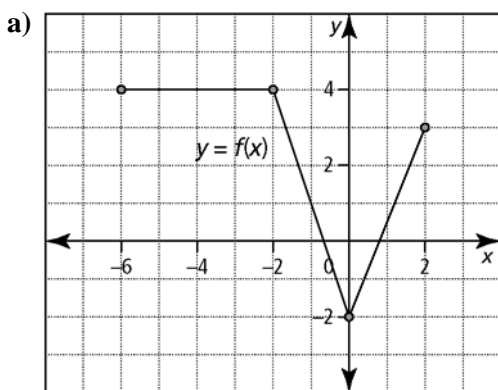
- What will the transformation of the graph of $y = f(x)$ be if y is replaced with $-y$ in the equation $y = f(x)$?
A It will be reflected in the x -axis. **B** It will be reflected in the y -axis.
C It will be reflected in the line $y = x$. **D** It will be reflected in the line $y = -1$.

Short Answer

- If the range of function $y = f(x)$ is $\{y \mid y \geq 4\}$, state the range of the new function $g(x) = f(x + 2) - 3$.
- As a result of the transformation of the graph of $y = f(x)$ into the graph of $y = -3f(x + 2) - 5$, the point $(2, 5)$ becomes point (x, y) . Determine the value of (x, y) .
- The graph of $f(x)$ is stretched horizontally by a factor of $\frac{1}{2}$ about the y -axis and then stretched vertically by $\frac{1}{3}$ a factor of about the x -axis. Determine the equation of the transformed function.

Extended Response

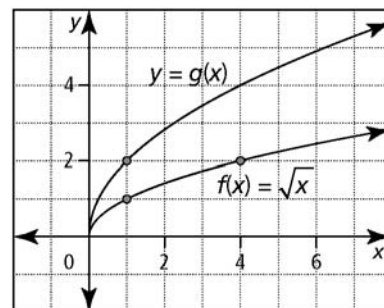
9. Copy the graph of each relation. Then, sketch the graph of the inverse relation.



10. The graphs of $y = f(x)$ and $y = g(x)$ are shown.

a) If the point $(1, 1)$ on $y = f(x)$ maps onto the point $(1, 2)$ on $y = g(x)$, describe the transformation and state the equation of $g(x)$.

b) If the point $(4, 2)$ on $y = f(x)$ maps onto the point $(1, 2)$ on $y = g(x)$, describe the transformation and state the equation of $g(x)$.



11. Consider the graph of the function $y = f(x)$.

a) Describe the transformation of $y = f(x)$ to $y = 3f(-2(x - 1)) + 4$.

b) Sketch the graph.

12. A function is defined by $f(x) = (x + 2)(x - 3)$.

a) If $g(x) = kf(x)$, describe how k affects the y -intercept of the graph of the function $y = g(x)$ compared to $y = f(x)$.

b) If $h(x) = f(mx)$, describe how m affects the x -intercepts of the graph of the function $y = h(x)$ compared to $y = f(x)$.

13. Complete the following for the quadratic function $f(x) = x^2 - 2x + 1$.

a) Write the equation of $f(x)$ in the form $y = a(x - h)^2 + k$.

b) Determine the coordinates of the vertex of $x = f(y)$.

c) State the equation of the inverse.

d) Restrict the domain of $y = f(x)$ so that its inverse is a function.

