

UNIT 5 • COMPARING AND CONTRASTING FUNCTIONS

Lesson 3: Function Transformations

Assessment

4. Let $f(x) = 3^x$. Suppose $f(x)$ is stretched horizontally to $g(x)$ and that $k = \frac{1}{2}$. Find $g(x)$.
- a. $g(x) = 3^{\frac{x}{2}}$
- b. $g(x) = 3^{2x}$
- c. $g(x) = \left(\frac{3}{2}\right)^x$
- d. $g(x) = \frac{1}{2}(3)^x$
5. Find $g(x)$ such that $g(x)$ is the reflection of $f(x) = 6x - 5$ across the y -axis.
- a. $g(x) = -6x - 5$
- b. $g(x) = 6x + 5$
- c. $g(x) = -6x + 5$
- d. $g(x) = 6x - 5$
6. Find $f(x)$ such that $f(x)$ is the reflection of $g(x) = 3x - 7$ across the x -axis.
- a. $f(x) = -3x - 7$
- b. $f(x) = -3x + 7$
- c. $f(x) = 3x + 7$
- d. $f(x) = 3x - 7$
7. Let $f(x) = x^2$. Suppose $f(x)$ is stretched vertically and that $k = 2$. Find $g(x)$.
- a. $g(x) = 4x^2$
- b. $g(x) = x^4$
- c. $g(x) = 2x^2$
- d. $g(x) = 2x^4$
8. Let $f(x) = 3^x$. Is this function even, odd, or neither?
- a. both even and odd
- b. even but not odd
- c. odd but not even
- d. neither even nor odd

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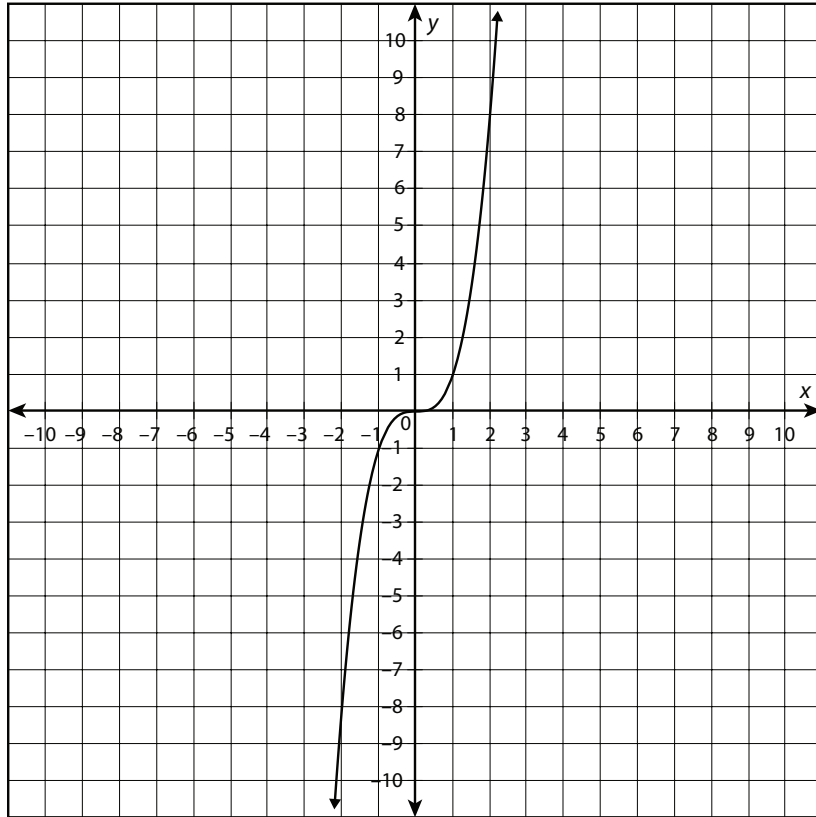
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9. Is the function in the following graph even, odd, or neither?



- a. both even and odd
- b. even but not odd
- c. odd but not even
- d. neither even nor odd

10. Suppose $g(x) = 3x^2$. Is $g(x)$ even, odd, or neither?

- a. both even and odd
- b. even but not odd
- c. odd but not even
- d. neither even nor odd

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Use what you know about function transformations and symmetry to complete the following problem.

11. Suppose $f(x) = 3x^2$.

a. Find $g(x)$ if $g(x)$ translates $f(x)$ down by 2 units.

b. Find $h(x)$ if $h(x)$ vertically compresses $f(x)$ by a factor of 0.5.

c. Find $j(x)$ such that $j(x)$ is the reflection of $f(x)$ across the x -axis.

d. Determine whether $f(x)$, $g(x)$, $h(x)$, and $j(x)$ are even, odd, or neither.