7-6 Extra Practice Transformations of Exponential Functions

Write a function $g(x)$ to represent the transformed graph.

1. $f(x) = 2^x$ moves 3 units up

$g(x) = 2^x + 3$

2. $f(x) = 8^x$ moves 1 unit down

$g(x) = 8^x - 1$

3. $f(x) = 5^x$ moves 2 units right

$g(x) = 5^{(x-2)}$

4. $f(x) = 3^x$ moves 4 units left

$g(x) = 3^{(x+4)}$

5. $f(x) = 6^x + 7$ moves 2 units down

$g(x) = 6^x + 5$

6. $f(x) = -2^x + 3$ moves 5 units right

$g(x) = -2^{(x-5)} + 3$

7. $f(x) = 4^x$ is compressed vertically by a factor of $\frac{1}{2}$

$g(x) = \frac{1}{2}(4^x)$

8. $f(x) = 3^x$ is stretched vertically by a factor of 5

$g(x) = 5(3^x)$

9. $f(x) = 2^x$ is compressed horizontally by a factor of 3

$g(x) = 2^{3x}$

10. $f(x) = 5^x$ is stretched horizontally by a factor of $\frac{1}{4}$

$g(x) = 5^{0.25x}$

Tell how the transformed function compares to the parent function.

11. $f(x) = 6^x$; $g(x) = 6^x + 8$

translated up 8 units

12. $f(x) = 5^x$; $g(x) = -5^x$

reflected across the *x*-axis

13. $f(x) = 3^x + 1$; $g(x) = 3^{2x} + 1$

compressed horizontally by a factor of 2

14. $f(x) = 4^x - 3$; $g(x) = 4^{0.5x} - 3$

stretched horizontally by a factor of 0.5

15. $f(x) = 2.3^x$; $g(x) = -2.3^{x-1}$

reflected across the *x*-axis; translated 1 unit right

16. $f(x) = 2^x$; $g(x) = 2^{-x} + 1$

reflected across the *y*-axis; translated 1 unit up

17. $f(x) = 5^x + 2$; $g(x) = 5^{-x} + 6$

reflected across the *y*-axis; translated 4 units up

18. $f(x) = 1.4^x - 1$; $g(x) = -1.4^x + 6$

reflected across the *x*-axis; translated 7 units up

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

stretched vertically by a factor of 2

20. $f(x) = -4x$; $g(x) = \frac{1}{3}(-4^x)$

compressed vertically by a factor of $\frac{1}{3}$