ACTIVITY 8 EXTRA PRACTICE

In Items 1 – 8, identify the transformation from the graph of $f(x)=|x|$ to the graph of $g(x)$.

1. $g(x)=|x|+2$ VT 2 units up
2. $g(x)=|x-3|$ HT 3 units right
3. $g(x)=|x|-1$ VT 1 unit down
4. $g(x)=|x+8|$ HT 8 units left
5. $g(x)=|x-5|+6$ HT 5 units right & VT 6 units up
6. $g(x)=|x+11|+1$ HT 11 units left & VT 1 unit up
7. $g(x)=|x-3|-3$ HT 3 units right & VT 3 units down
8. $g(x)=|x+2|-4.7$ HT 2 units left & VT 4.7 units down

For Items 9 – 16, write the equation $g(x)$ of the function described by each of the following transformations of the graph of $f(x)=\sqrt[3]{x}$.

9. Translated 5 units to the right of $f(x)$.
   a. Write the equation. $g(x) = \sqrt[3]{x-3}$
   b. Write the equation in function notation. $g(x) = f(x-3)$
10. Translated 7 units down from $f(x)$.
   a. Write the equation. $g(x) = \sqrt[3]{x} - 7$
   b. Write the equation in function notation. $g(x) = f(x) - 7$
11. Translated 1 unit left, and 6 units down from $f(x)$.
   a. Write the equation. $g(x) = \sqrt[3]{x+1} - 6$
   b. Write the equation in function notation. $g(x) = f(x+1) - 6$
12. Translated 8 units left of $f(x)$.
   a. Write the equation. $g(x) = \sqrt[3]{x+8}$
   b. Write the equation in function notation. $g(x) = f(x+8)$
13. Translated 9 units up, and 13 units to the right of $f(x)$.
   a. Write the equation. $g(x) = \sqrt[3]{x-13} + 9$
   b. Write the equation in function notation. $g(x) = f(x-13) + 9$

14. Translated 2 units up from $f(x)$.

a. Write the equation. $g(x) = \sqrt[3]{x} + 2$

b. Write the equation in function notation. $g(x) = f(x) + 2$

15. Translated 7 units left, and 1 unit up from $f(x)$.

a. Write the equation. $g(x) = \sqrt[3]{x+7} + 1$

b. Write the equation in function notation. $g(x) = f(x+7) + 1$

16. Translated down 3 units, and 9 units right from $f(x)$.

a. Write the equation. $g(x) = \sqrt[3]{x-9} - 3$

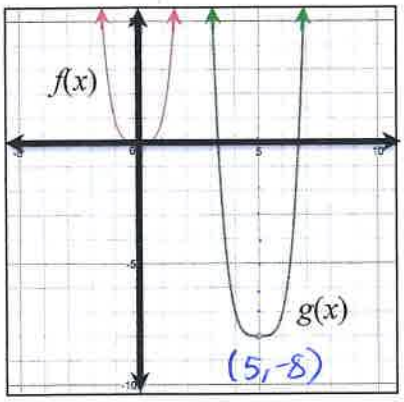
b. Write the equation in function notation. $g(x) = f(x-9) - 3$

17. The figure shows the graph of $f(x) = x^4$ and the graph of $g(x)$. Write an equation for the graph of $g(x)$.

$g(x) = (x-5)^4 - 8$

or

$g(x) = f(x-5) - 8$

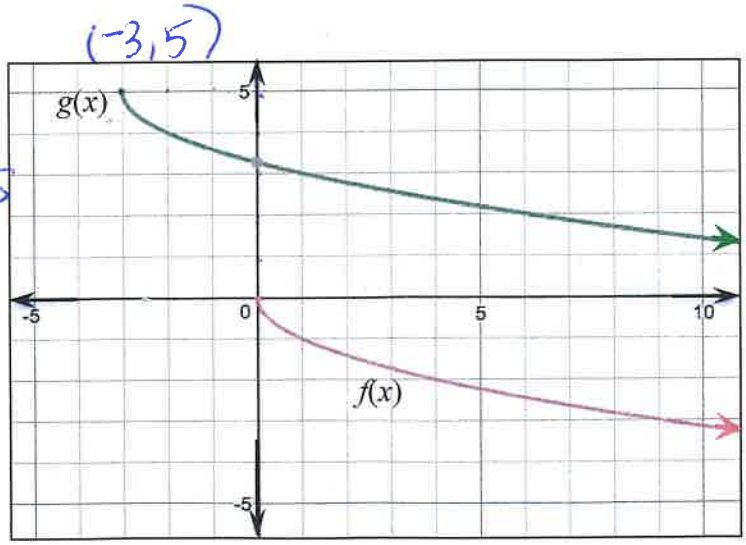


18. The figure shows the graph of $f(x) = -\sqrt{x}$ and the graph of $g(x)$. Write an equation for the graph of $g(x)$.

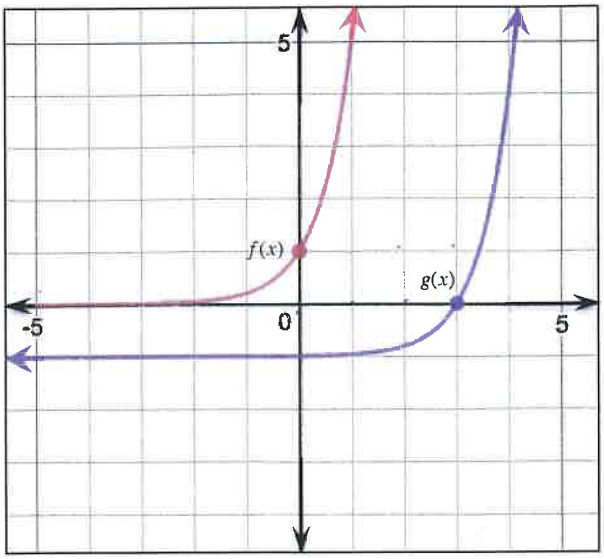
$g(x) = -\sqrt{x+3} + 5$

or

$g(x) = f(x+3) + 5$



19. The figure shows the graph of $f(x)=5^x$ and the graph of $g(x)$. Write an equation for the graph of $g(x)$.



$g(x)=5^{x-3}-1$

or

$g(x)=f(x-3)-1$

20. Caitlin put \$5,000 down on a \$20,000 car and has to make \$350 payments in order to pay off the balance on the car. Write a function that describes the amount of money Caitlin has left to pay on her car.

$f(x)=15{,}000-350x$

21. Jeff put \$7,000 down on a \$20,000 car and also has to make \$350 payments in order to pay off the balance on the car. Write a function that describes the amount of money Jeff has left to pay on his car.

$j(x)=13{,}000-350x$

22. How does the equation for Jeff's balance change the graph of Caitlin's balance?

Its 2000 units down from Caitlin's graph.

23. If Caitlin made x payments, and Jeff made 3 less payments than Caitlin, write a new function that describes the amount of money Jeff has left to pay on his car.

$j(x)=13{,}000-350(x-3)$

24. How does the new equation for Jeff's balance change the graph of Caitlin's balance?

Its 2000 units down and 3 units to the right of Caitlin's graph.

25. Isaias drew the graph of $f(x)=x^3$. Then, he translated the graph 4 units down to get the graph of $g(x)$. Next, he translated the graph 7 units left and 6 units up to get the graph of $h(x)$. What is the equation of $h(x)$?

$g(x)=x^3-4$

$(x-7)\quad +6$

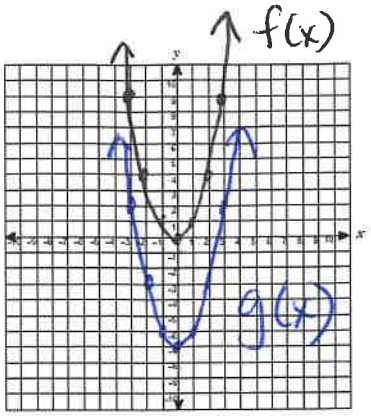
$h(x)=(x+7)^3+2$ or

$h(x)=g(x+7)+6$

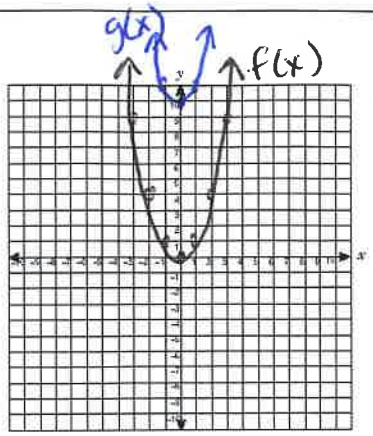
WANT EVEN MORE EXTRA PRACTICE?

Page 114, "LESSON 8-1 PRACTICE" problems 17 – 23.

~~16.~~ 17



~~17.~~ 18



~~18.~~ 19

$g(x) = x^3 + 9$ or

$g(x) = f(x) + 9$

~~19.~~ 20.

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

$g(x) = f(x) - 5$

~~20.~~ 21.

$g(x) = x + 2$ or

$g(x) = f(x) + 2$

~~21.~~ 22.

$g(x) = x - 4$ or

$g(x) = f(x) - 4$

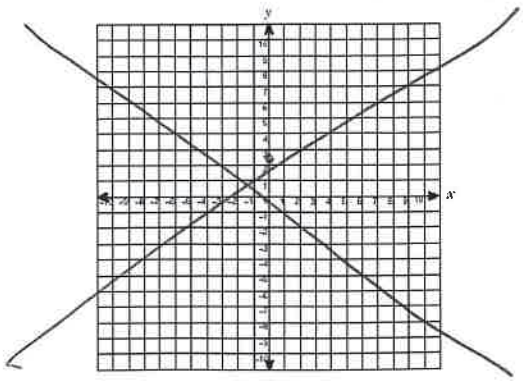
~~22.~~ 23.

a) $f(x) = 2.75 + 2.50x$

$g(x) = 3.25 + 2.50x$

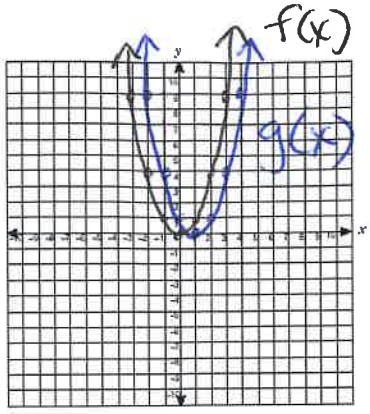
b) The graph of $g(x)$ is a vertical translation of $f(x)$ 0.5 units up.

23.

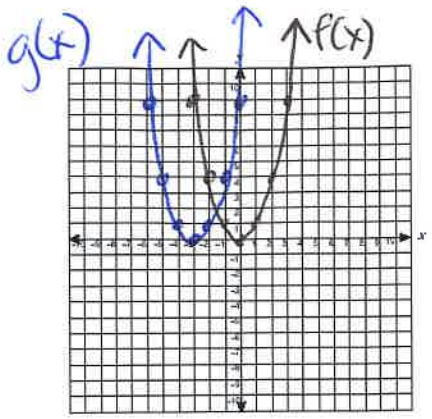


Page 118, "LESSON 8-2 PRACTICE" problems 16 – 21.

16.



17.



18. $g(x) = (x+7)^3$ or $g(x) = f(x+7)$

19. $g(x) = (x-8)^3$ or $g(x) = f(x-8)$

20. a) $g(x) = (x+3)$ or $g(x) = f(x+3)$

b) $g(x) = (x-5)$ or $g(x) = f(x-5)$

yes, because for the function $y = x$, a HT of k units left or right is the same as a VT of k units up/down.

21) $h(x)$ is a HT 4 units to the right of $f(x)$.