9.

If the point (-7 , 3) lies on the graph of an elementary function $y = g(x)$, find a point that lies on the graph on the function below.

a. $y = g(x-3) - 8$

b. $y = g(x+4) - 9$

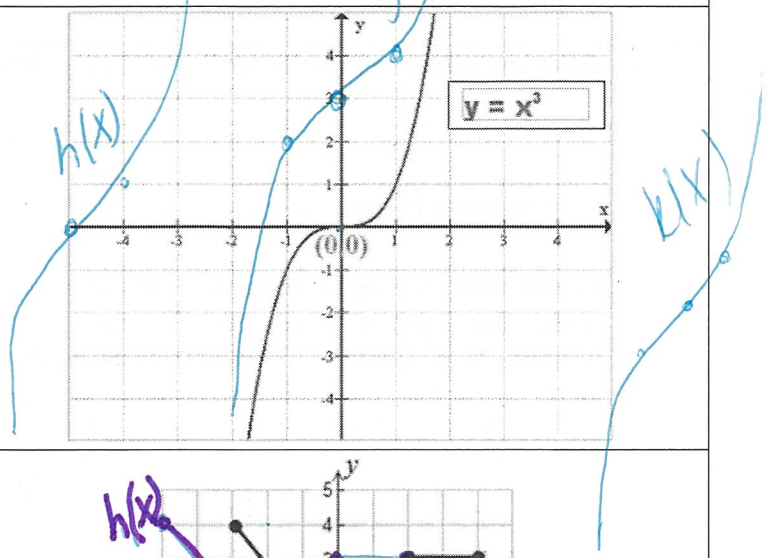
SKIP!

10. The function to the left is $f(x) = x^3$. Write the equation for the following translations, and then graph the new function

a. Shift up 3, $g(x) =$ $x^3 + 3$

b. Shift to the left 5, $h(x) =$ $(x+5)^3$

c. Shift down 2 and to the right 7, $k(x) =$ $(x-7)^3 - 2$

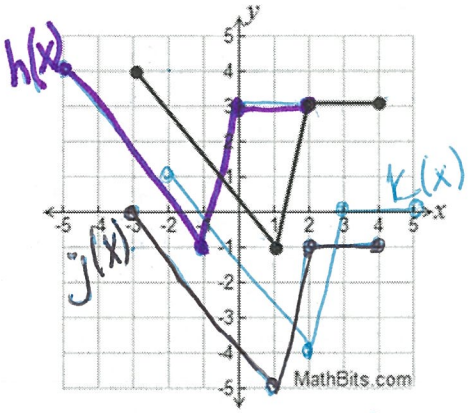


11. The function to the right is g(x). Graph the following functions.

a. h(x)=g(x+2)

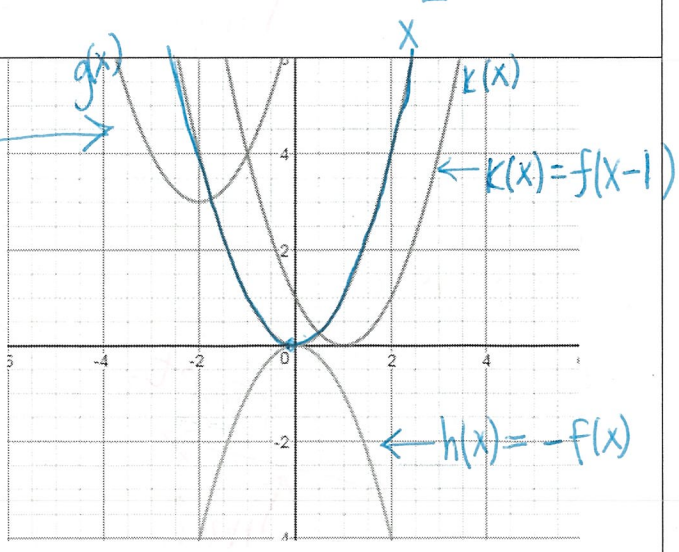
b. j(x)=g(x)-4

c. k(x)=g(x-1)-3



12. The original function $f(x) = x^2$ has been shifted and reflected to create 3 new graphs. Label and write the equation of the each new graph.

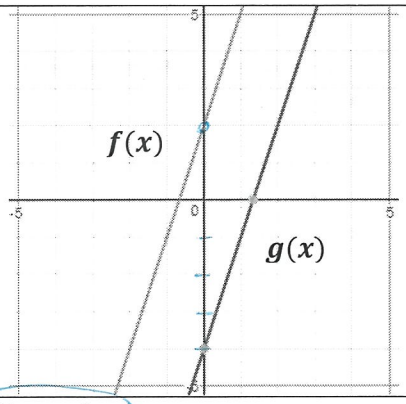
$g(x) = f(x+2) + 3$



13. Given the graph to the right:

Translation Form: $g(x) =$ $f(x)-6$

Slope-Intercept: $g(x) =$ $3x-4$



14. Given the following functions: $k(x) = z(x) + 52$ *and* $k(x) = -3x + 1$

$-3x+1 = z(x)+52$
$-52 \quad -52$

Translation Form: $z(x) =$ $k(x)-52$ Slope-Intercept: $z(x) =$ $-3x-51$

15. Angela and Kristen are comparing how much sleep they get each week. They realize they sleep the same amount each weekday, but sleep different amount over the weekend. Angela says I get 8 hours of sleep each weekday, and I sleep for 20 hours over the weekend. Kristen says she gets 24 hours over the weekend.

a. Write explicit functions in slope-intercept form to represent Angela's $A(x)$ and Kristen's $K(x)$ hours of sleep.

$A(x) =$ $8x+20$ $K(x) =$ $8x+24$

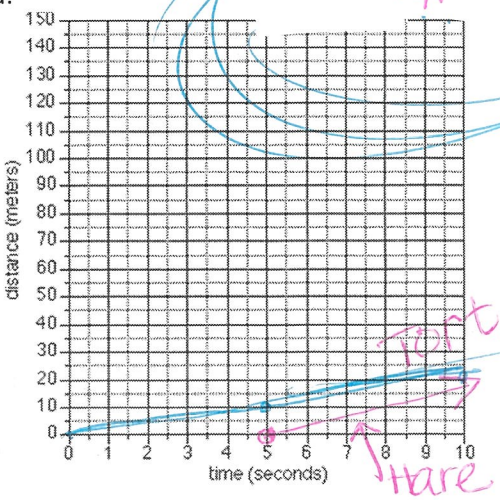
b. Is there a vertical translation between the two explicit functions? If yes, write one explicit function as a translation of the other. If no, explain why not.

Yes, $A(x) = K(x) - 4$ or $K(x) = A(x) + 4$

16. On a sunny day in San Diego a tortious and a hare decide to race. The hare is so confident, that it allows the tortious to start 5 seconds before him. What the hare doesn't know is that the tortious has been training, and now runs at the same pace. If both creatures run at a pace of 2 meters per second, graph their distance vs. time below.

Typo

a.



b. Write explicit functions, in slope intercept or point slope form, to represent each animal.

$H(x) =$

X	Y
30	0

$T(x) =$

X	Y
0	0
1	2
2	4
3	6
4	8
5	10
6	12
60	120
120	240

300	600

c. Is there a vertical or horizontal translation between the two explicit functions? Write one explicit function as a translation of the other.

Horizontal
Shift right 5

$H(x) = 2(x-5)$ $T(x) = 2x$

$T(x) = H(x+5)$ or $H(x) = T(x-5)$