Algebra 1: 5.4 HW Part 2 **Name** _____ **Period** _____
Reflections of Linear and Exponential Functions

1. **Write the equation of each function $g(x)$ after the translation described.**

   a. $f(x)=3x+2$ after a reflection over the y-axis. $g(x)=$ 3(–x) + 2 or –3x + 2

   b. $f(x)=-6x^2$ after a reflection over the x-axis. $g(x)=$ $-(-6x^2)=6x^2$

   c. $f(x)=8^x$ after a reflection over the y-axis. $g(x)=$ 8^{-x}

   d. $f(x)=-4x+9$ after a reflection over the x-axis. $g(x)=$ $-(-4x+9)=4x-9$

   e. $f(x)=7^{-x}$ after a reflection over the y-axis. $g(x)=$ $7^{-(-x)}=7^x$

   f. $f(x)=2x^3$ after a reflection over the x-axis. $g(x)=$ $-2x^3$

   g. $f(x)=\frac{6}{7}x^4$ after a reflection over the y-axis. $g(x)=$ $\frac{6}{7}(-x)^4=\frac{6}{7}x^4$

2. **Describe each graph $g(x)$ in relation to its basic function $f(x)$.**

   a. Compare $g(x)=-(7x+1)$ to the basic function $f(x)=7x+1$

   Reflection over the x-axis or a vertical reflection.

   b. Compare $g(x)=b^{-x}$ to the basic function $f(x)=b^x$

   Reflection over the y-axis or a horizontal reflection

   c. Compare $g(x)=-9x^2$ to the basic function $f(x)=9x^2$

   Reflection over the x-axis or a vertical reflection

   d. Compare $g(x)=(-x)^2$ or x^2 to the basic function $f(x)=x^2$

   Reflection over the y-axis or a horizontal reflection

   e. Compare $g(x)=-(-b^x)$ or b^x to the basic function $f(x)=-b^x$

   Reflection over the x-axis or a vertical reflection.

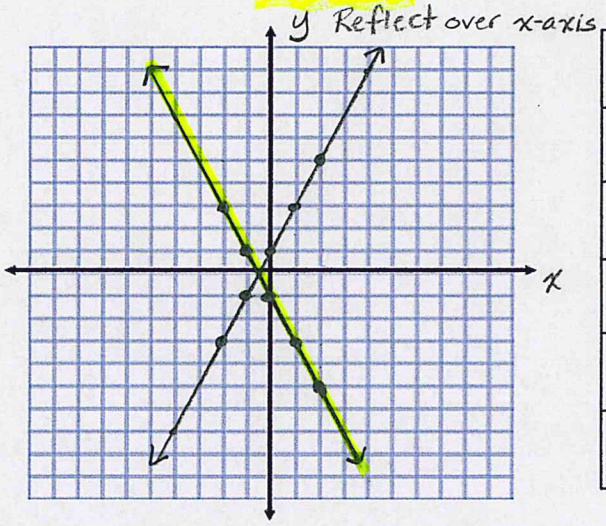
   f. Compare $g(x)=2(-x)+7$ or $-2x+7$ to the basic function $f(x)=2x+7$

   Reflection over the y-axis or a horizontal reflection.

3. Graph each function. Then graph the transformation.

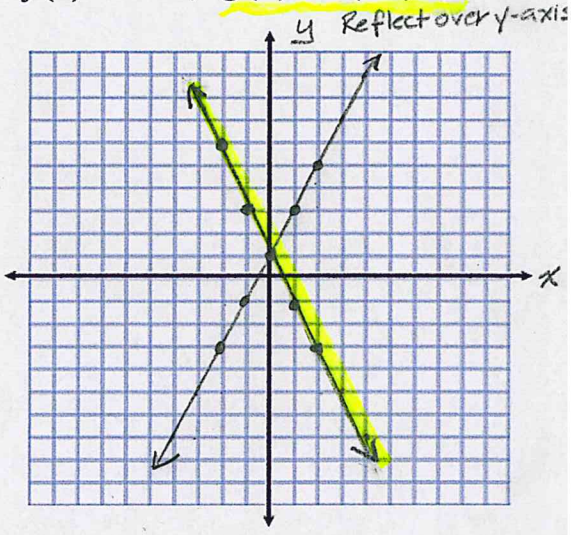
a. $f(x)=2x+1$; $g(x)=-(2x+1)$ VR

x	y
-2	-3
-1	-1
0	1
1	3
2	5



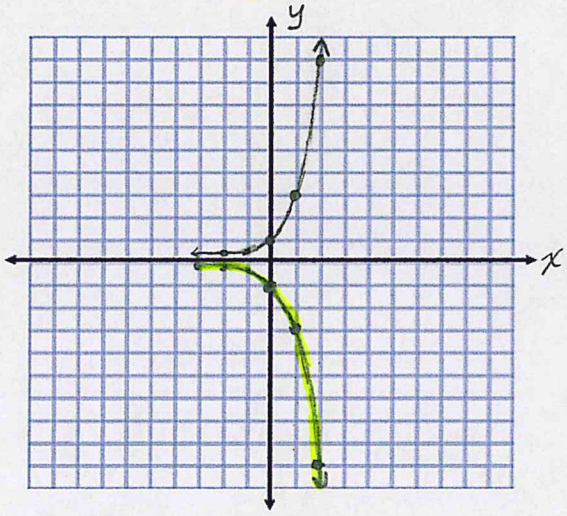
x	y
-2	-3
-1	-1
0	1
1	3
2	5

b. $f(x)=2x+1$; $g(x)=2(-x)+1$ HV



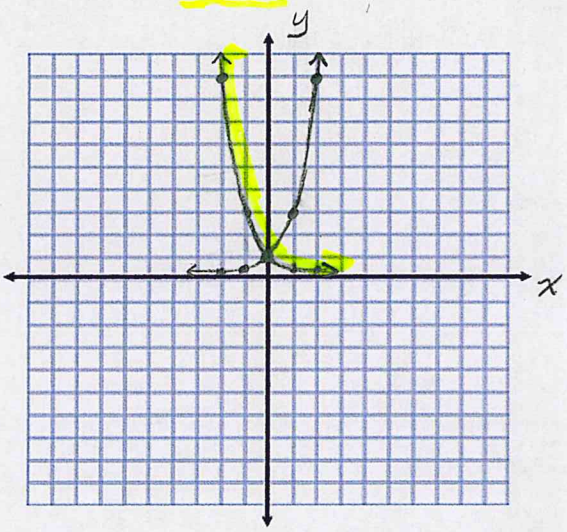
c. $f(x)=3^x$; $g(x)=-3^x$ VR

x	y
-2	$\frac{1}{9}$
-1	$\frac{1}{3}$
0	1
1	3
2	9

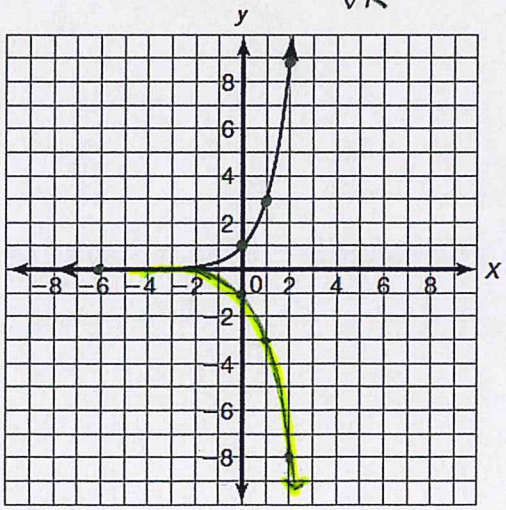
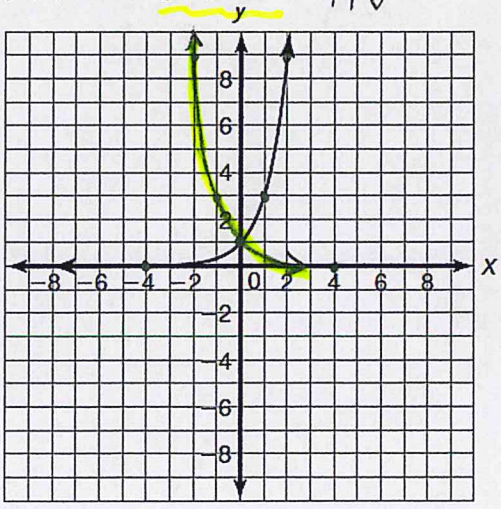


d. $f(x)=3^x$; $g(x)=3^{-x}$ HV

x	y
-2	$\frac{1}{9}$
-1	$\frac{1}{3}$
0	1
1	3
2	9



e. $f(x)=b^x$; $g(x)=-b^x$ VR



f. $f(x)=b^x$; $g(x)=b^{-x}$ HV