Review Families of Functions and Inverse Functions 2

Name_____

SHOW ALL WORK

1. Find the inverse of the following relations.

a)

x	y
4	6
2	7
8	6
4	9

b)

x	y
-1	-4
-6	-2
-3	-10
3	7

1. a.

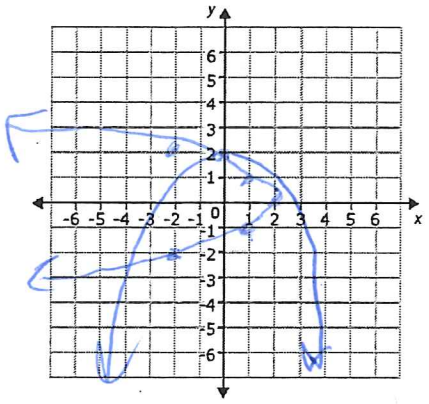
X	Y
6	4
7	2
6	8
9	4

b.

X	Y
-4	-1
-2	-6
-10	-3
7	3

2. With the use of a calculator, graph the original function and its inverse.

a) $y = -x^2 + 2$



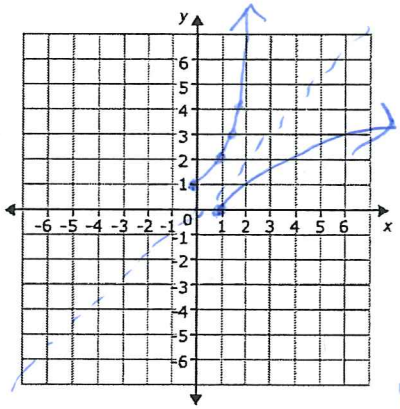
Orig

X	Y
-2	-2
-1	1
0	2
1	1
2	-2

Inverse

X	X
-2	-2
1	-1
2	0
1	1
-2	2

b) $y = \sqrt{x-1}$



orig

X	Y
1	0
2	1
3	1.4
4	1.7

Inverse

X	X
0	1
1	2
1.4	3
1.7	4

3. Solve for the inverse function.

a) $y = 10x - 2$

$x = 10y - 2$

$+2 \quad +2$

$\frac{x+2}{10} = \frac{10y}{10}$ $\frac{x+2}{10} = y$

$f^{-1}(x) = \frac{x+2}{10}$

b) $y = 3x^2 - 2$

$x = 3y^2 - 2$

$+2 \quad +2$

$x+2 = 3y^2$

$\frac{x+2}{3} = y^2 \rightarrow \pm\sqrt{\frac{x+2}{3}} = f^{-1}(x)$

c) $y = 5x^2 + 1$

$x = 5y^2 + 1$

$x - 1 = 5y^2$

$\frac{x-1}{5} = y^2 \rightarrow \pm\sqrt{\frac{x-1}{5}} = f^{-1}(x)$

d) $y = 5(x - 3)$

$y = 5x - 15$

$x = 5y - 15$

$x + 15 = 5y$

$\frac{x+15}{5} = f^{-1}(x)$

8. Will the equation $y = x$ or $y = x^2$ be stretched or compressed:

a) $y = (4/3)x$

$\frac{4}{3} = 1.33 > 1$

Stretch

b) $y = (2/5)x^2$

Compression

c) $y = 6x$

Stretch

9. Write the function rule for each function reflected over the x-axis:

a) $y = x - 1$

$y = -(x - 1)$

b) $y = 7x + 3$

$y = -(7x + 3)$

c) $y = -8x - 2$

$y = -(-8x - 2)$

d) $y = 6x^2$

$y = -6x^2$