

Homework 2.6: Inverse Relations (Graphs & Tables)

Name: Key!

Math 3

Find a table of values for each function and its inverse.

1. a. $f(x) = 3x + 1$

Function	
x	f(x)
-3	-8
-2	-5
-1	-2
0	1
1	4
2	7
3	10

Inverse	
x	f ⁻¹ (x)
-8	-3
-5	-2
-2	-1
1	0
4	1
7	2
10	3

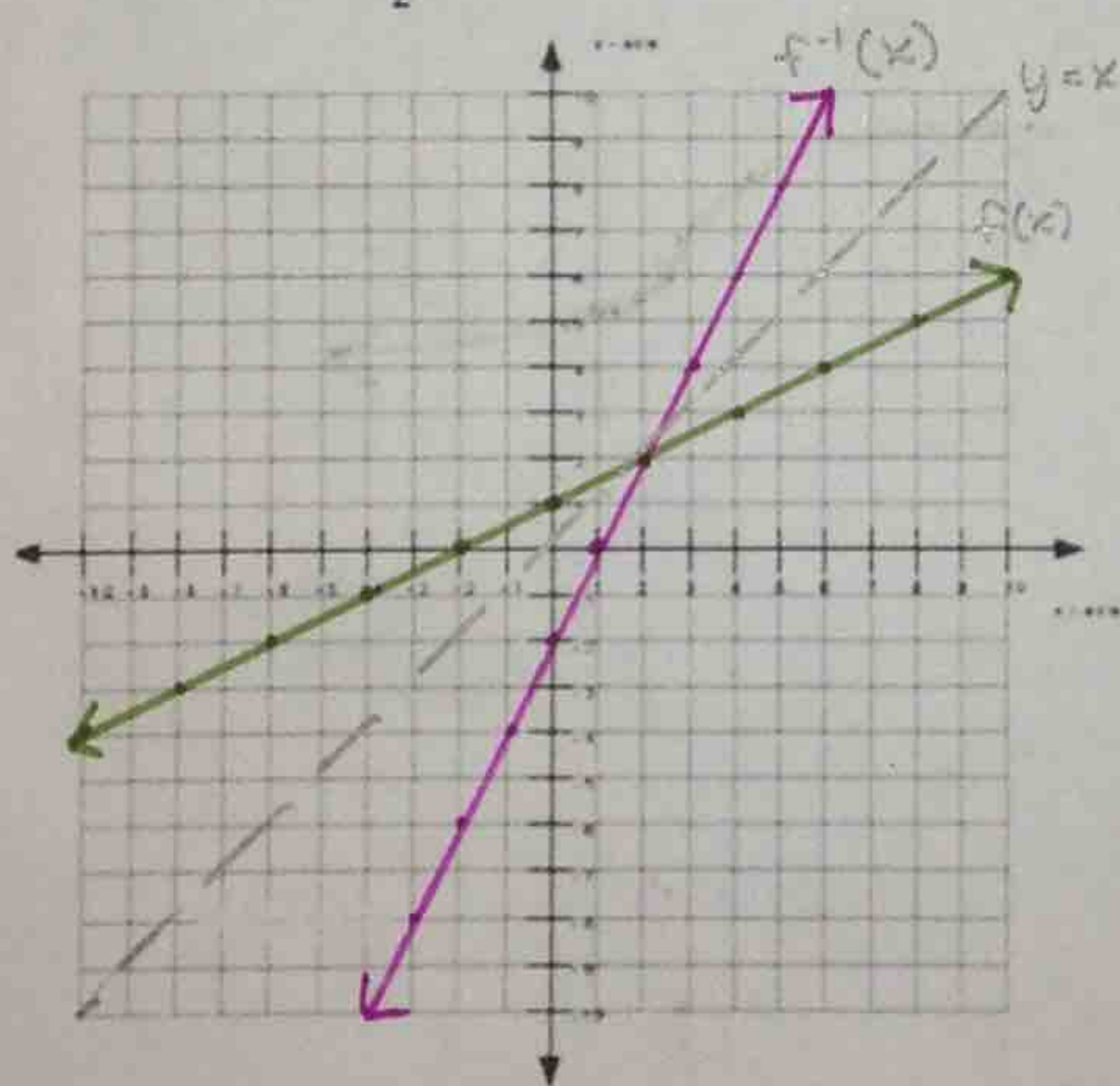
b. $f(x) = (2 - x)^2$

Function	
x	f(x)
-3	25
-2	16
-1	9
0	4
1	1
2	0
3	1

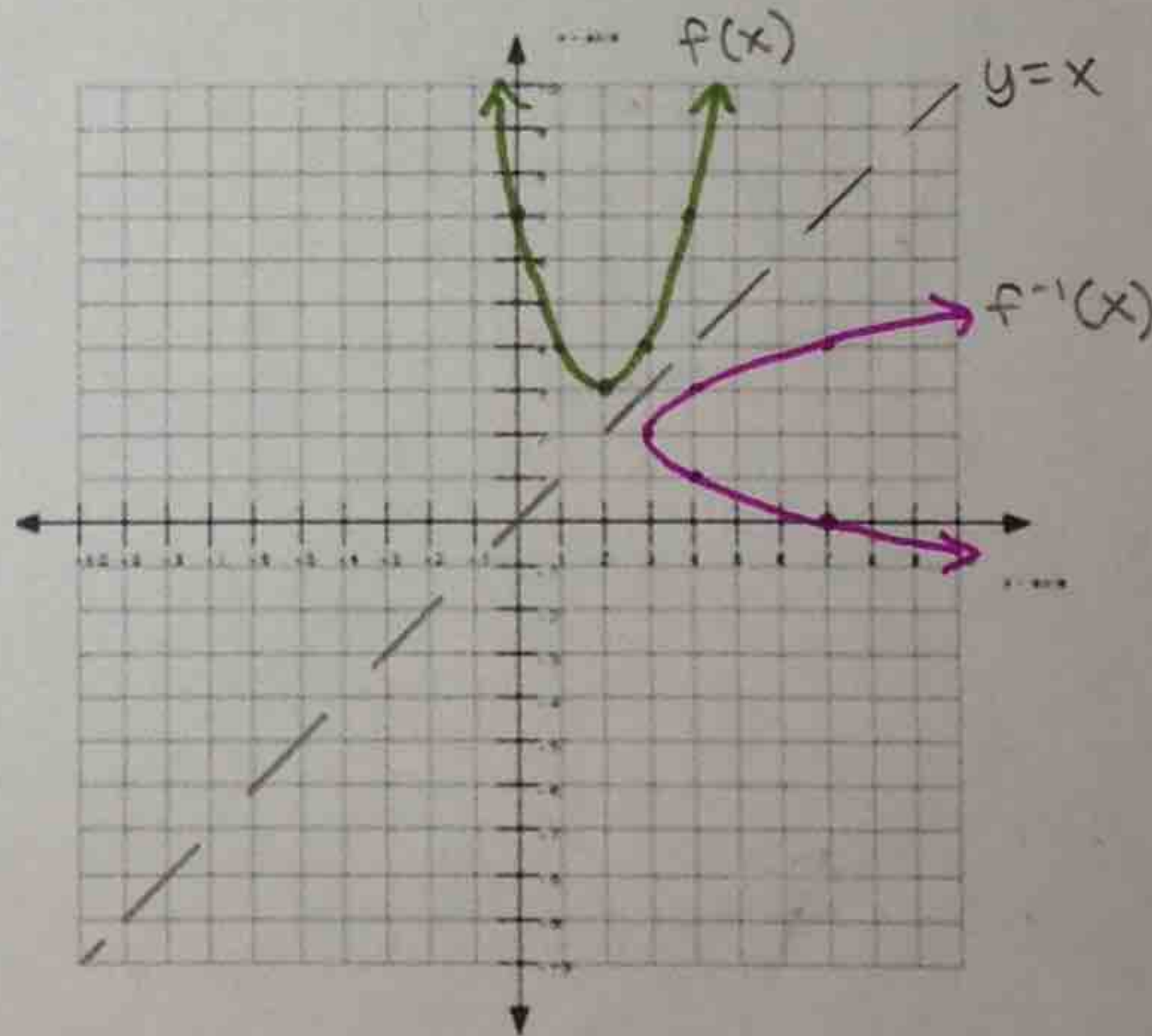
Inverse	
x	f ⁻¹ (x)
25	-3
16	-2
9	-1
4	0
1	1
0	2
1	3

2. Graph each function, its inverse, and their line of symmetry. Label the function and its inverse on each graph.

a. $f(x) = \frac{1}{2}x + 1$



b. $f(x) = (x - 2)^2 + 3$



3. Find the domain and range of each function and the domain and range of its inverse in problems 2 (a-b) above.

a. $f(x) = \frac{1}{2}x + 1$

$f(x)$ Domain: $(-\infty, \infty)$ Range: $(-\infty, \infty)$

$f^{-1}(x)$ Domain: $(-\infty, \infty)$ Range: $(-\infty, \infty)$

b. $f(x) = (x - 2)^2 + 3$

$f(x)$ Domain: $(-\infty, \infty)$ Range: $[3, \infty)$

$f^{-1}(x)$ Domain: $[3, \infty)$ Range: $(-\infty, \infty)$

4. For each function in problems 2 and 3 (a-b) above, identify whether its inverse is or is not a function. Explain your answer in complete sentences:

a. Is the inverse of $f(x) = \frac{1}{2}x + 1$ a function? Explain.

Yes, the x-values don't repeat!

b. Is the inverse of $f(x) = (x - 2)^2 + 3$ a function? Explain.

No, it does not pass the vertical line test.

5. Find the inverse for each relation.

a) $\{(1, -3), (2, 3), (5, 1), (6, 4)\}$

$\{(-3, 1), (3, 2), (1, 5), (4, 6)\}$

b) $\{(-5, 6), (-6, -8), (1, -2), (10, 3)\}$

$\{(6, -5), (-8, -6), (-2, 1), (3, 10)\}$

Directions: Graph the inverse for each relation below (put your answer on the same graph).

