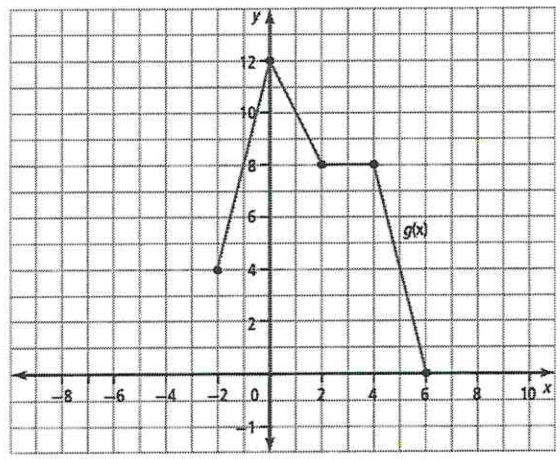
 Date: Answer key

OUTCOME R6 – Review

1. a) Without graphing, **explain** if the inverse of $g(x)$ would be a **function**.

↳ No, the inverse of g(x) would not represent a function because g(x) does not pass the horizontal line test



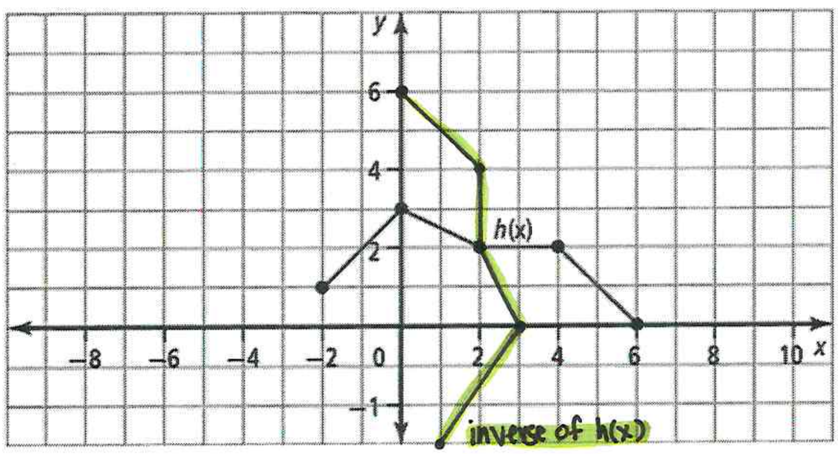
b) Determine the **domain** and **range** of the **inverse** of $g(x)$

Domain: [0,12]

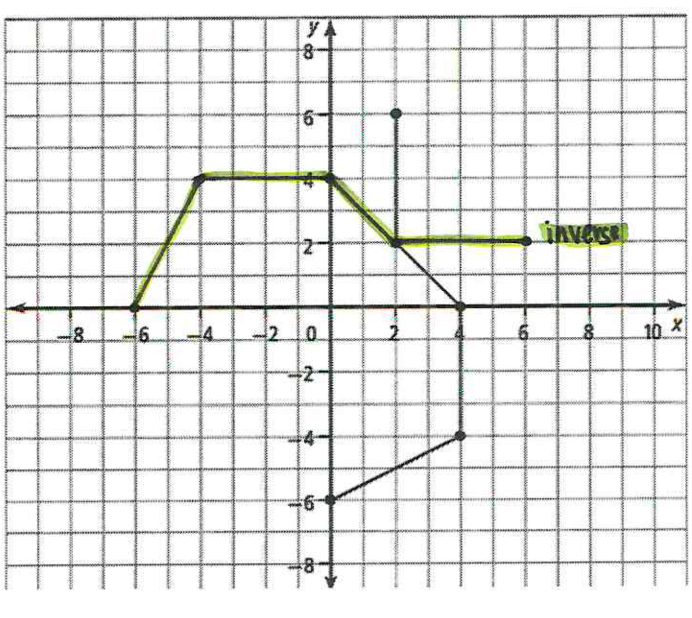
Range: [-2,6]

2. Sketch the graph of the **inverse** of each of the following. State any **invariant point(s)**, if they exist.

a)



b)



3. The points $(-3, 7)$, $(0,5)$, $(3,3)$, and $(6,1)$ are all located on the graph of $f(x)$. Determine the corresponding points that would be located on the graph of the **inverse** of $f(x)$.

$(7,-3)$, $(5,0)$, $(3,3)$ and $(1,6)$

4. Determine, algebraically, the **equation of the inverse** of the given function $f(x) = -\frac{2}{3}x + 5$. Does its inverse represent a **function**?

$y = -\frac{2}{3}x + 5$

$x = -\frac{2}{3}y + 5$

$x - 5 = -\frac{2}{3}y$

$-\frac{3}{2}(x-5) = y$

$-\frac{3}{2}x + \frac{15}{2} = y$

↳ yes, $y = -\frac{3}{2}x + \frac{15}{2}$ represents a function.

5. Determine, algebraically, the **equation of the inverse** of the function $f(x) = (x+3)^2 - 1$.

Restrict the domain of $f(x)$ so that its inverse represents a function.

$y = (x+3)^2 - 1$

$x = (y+3)^2 - 1$

$x + 1 = (y+3)^2$

$\pm\sqrt{x+1} = y + 3$

$-3 \pm \sqrt{x+1} = y$

↳ Restrict domain of $f(x)$ to

$x \geq -3$

or

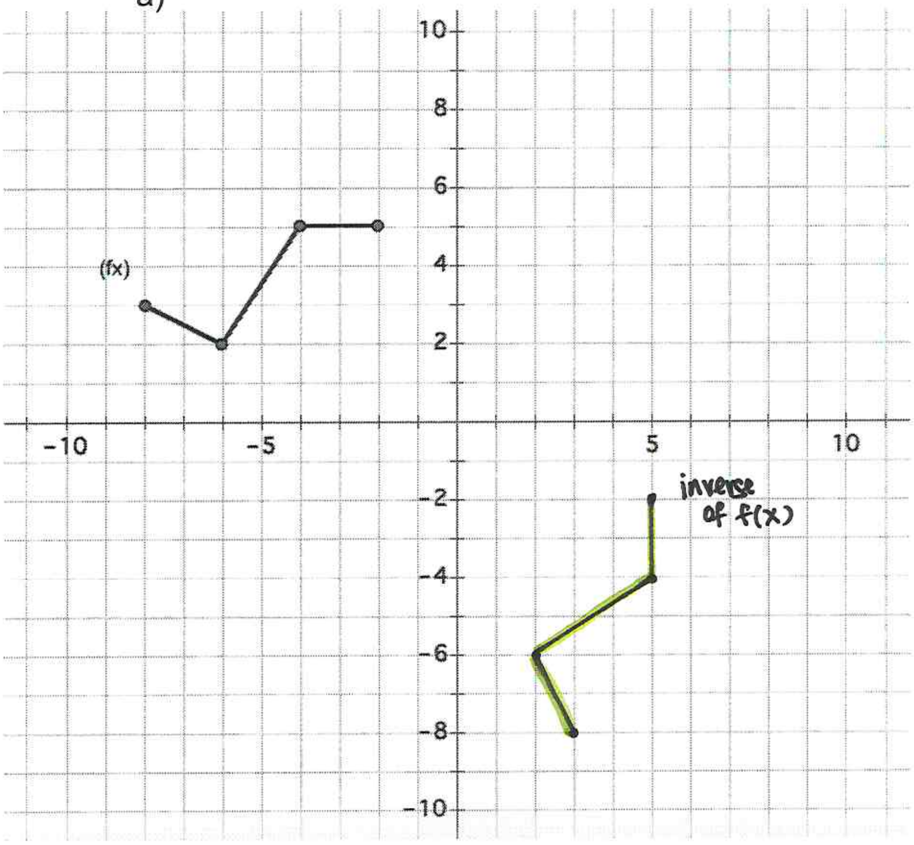
$x \leq -3$

6. The graph of a relation and its inverse are reflected over the line $y=x$

MPC40S Date: ______________________

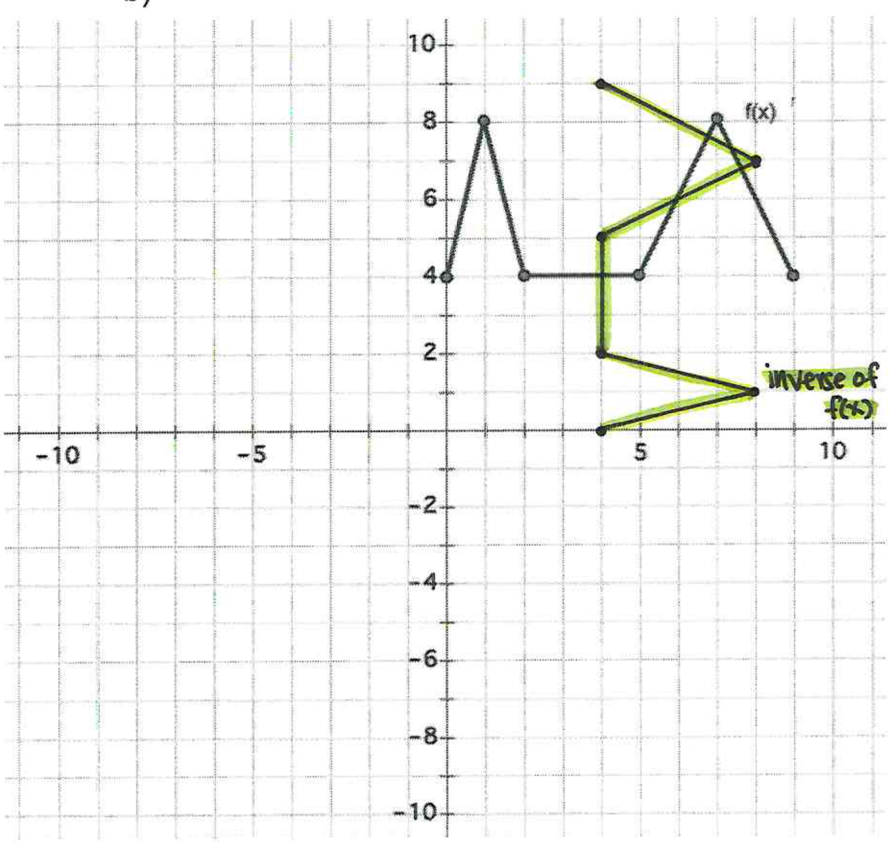
7. Given the graph of $f(x)$ below, reflect the graph of $f(x)$ over the line $y = x$. State the **domain** and **range** for both graphs.

a)



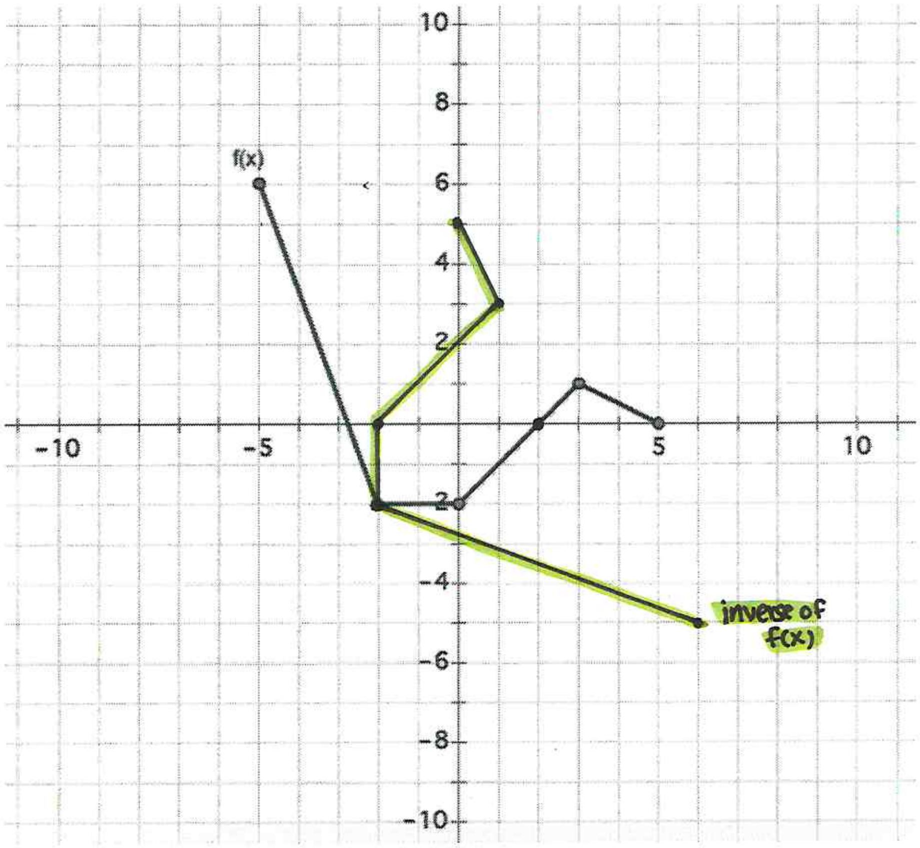
	$f(x)$	Inverse
D	[-8, -2]	[2, 5]
R	[2, 5]	[-8, -2]

b)



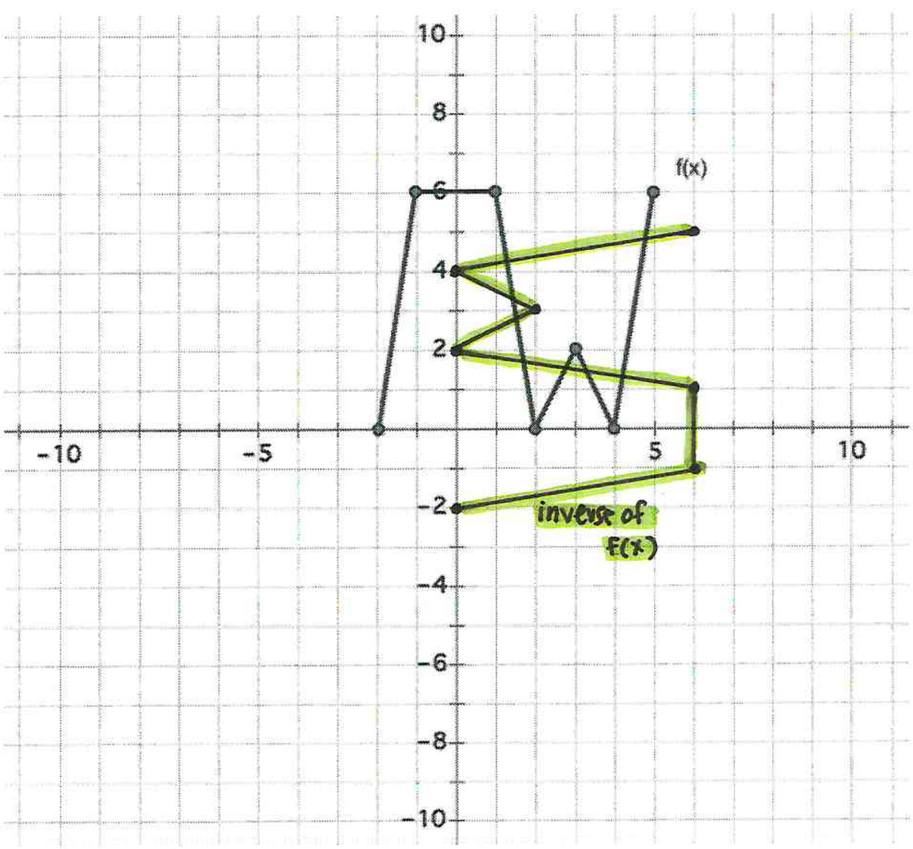
	$f(x)$	Inverse
D	$0 \leq x \leq 9$	$4 \leq x \leq 8$
R	$4 \leq y \leq 8$	$0 \leq y \leq 9$

c)



	$f(x)$	Inverse
D	[-5, 5]	[-2, 6]
R	[-2, 6]	[-5, 5]

d)



	$f(x)$	Inverse
D	$-2 \le x \le 5$	$0 \le x \le 6$
R	$0 \le y \le 6$	$-2 \le y \le 5$