Unit 12: Inverse functions

I. Given the function:

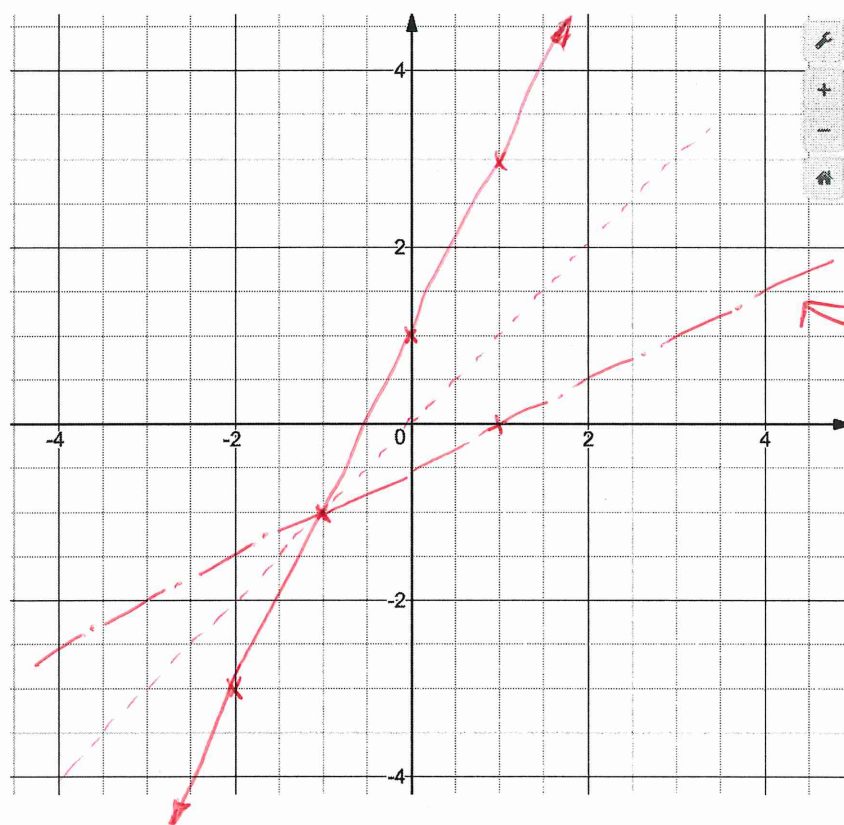$$f(x) = 2x + 1$$

Graphing method

Rearranged
Tables etc.
Rewat findin
for ?.

1. Plot the function on the axes below. ✓
2. Indicate in the table a few key values for (x,y). ✓
3. Graph the line y=x as dotted line.
4. Find the inverse function by reflecting the original with respect to the symmetry line.) more dain.

) ← inverse

$f(x)$

See on next page

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

Date:_____

Table method

5. Fill in the table below based on the table you filled for f(x).

$f^{-1}(x)$

x	y
0	-1
1	0
2	3
3	8
4	15

Domain $[0, \infty)$
Range $[-1, \infty)$

6. Mark these point on the graph you produced in (4). Is this the same line?

Algebraic method

7. Using swapping x ⟷ y method, find the formula for the inverse function.

① $y = \sqrt{x+1}$

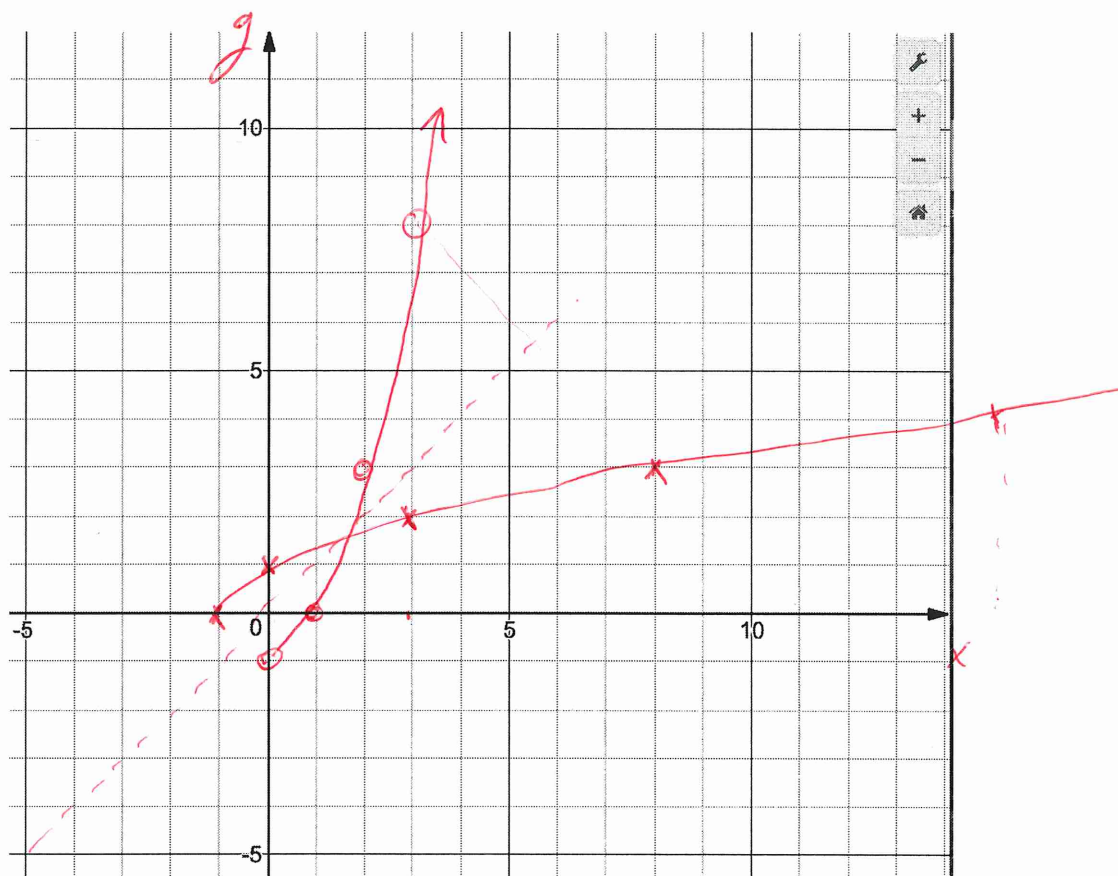② $x = \sqrt{y+1}$

③ $x^2 = y+1$

$\boxed{y = x^2 - 1}$

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II. Given the function:

$$f(x) = \sqrt{x} + 1$$

Graphing method

1. Plot the function on the axes below.
2. Indicate in the table a few key values for (x,y).
3. Graph the line y=x as dotted line.
4. Find the inverse function by reflecting the original with respect to the symmetry line.

$f(x)$

Domain: $[-1, \infty)$

Range: $[0, \infty)$

x	y
-1	0
0	1
3	2
8	3
15	4

Date:_____

Table method

5. Fill in the table below based on the table you filled for f(x).

$$f^{-1}(x)$$

Domain:___$(-\infty, \infty)$___

Range: ___$(-\infty, \infty)$___

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

6. Mark these point on the graph you produced (4). Is this the same line?

Algebraic method

7. Using swapping x ⟵⟶ y method, find the formula for the inverse function.

① $y = 2x+1$

② $x = 2y+1$

③ $2y = x-1$

$$y = \tfrac{1}{2}x - \tfrac{1}{2}$$

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