Unit 12: Inverse functions

**I.** Given the function:

$$f\left(x\right)=2x+1$$

1. Indicate in the table a few key values for (x,y).
2. Plot the function on the axes below.
3. Graph the line y=x as dotted line.
4. **Graph Method:** Find the inverse function by reflecting the original with respect to the symmetry line.
5. **Table Method:** Fill in the table below based on the table you filled for f(x).
6. Mark these points on the graph. Did you get the same line?



$$f^{-1}\left(x\right)$$

$$f\left(x\right)$$

|  |  |
| --- | --- |
| $$x$$(in) | $$y$$(out) |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |

|  |  |
| --- | --- |
| (in)$$x$$ | (out)$$y$$ |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |

**Algebraic method**

$$f\left(x\right)=2x+1$$

1. Using swapping x 🡨🡪 y method, find the formula for the inverse function.

**II.** Given the function:

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

1. Indicate in the table a few key values for (x,y).
2. Plot the function on the axes below.
3. Graph the line y=x as dotted line.
4. **Graph Method:** Find the inverse function by reflecting the original with respect to the symmetry line.
5. **Table Method:** Fill in the table below based on the table you filled for f(x).
6. Mark these points on the graph. Did you get the same line?



$$f^{-1}\left(x\right)$$

Domain:\_\_\_\_\_\_\_\_

Range: \_\_\_\_\_\_\_\_\_

$$f\left(x\right)$$

Domain:\_\_\_\_\_\_\_\_

Range: \_\_\_\_\_\_\_\_\_

|  |  |
| --- | --- |
| $$x$$(in) | $$y$$(out) |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |

|  |  |
| --- | --- |
| (in)$$x$$ | (out)$$y$$ |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |

**Algebraic method**

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

1. Using swapping x 🡨🡪 y method, find the formula for the inverse function.