

# MATH 1314 – College Algebra

## Inverse Functions Exercises

1. The function  $f(x)$  is defined by the following table.

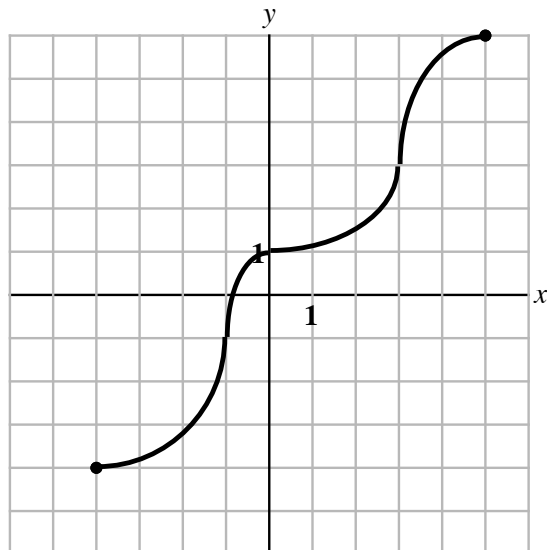
$x$	-3	-2	-1	0	1	2	3
$y$	0.125	0.25	0.5	1	2	4	8

- (a) Give the domain of  $f$ .      (b) Give the range of  $f$ .      (c) Graph  $y = f(x)$ .  
 (d) Is  $f(x)$  a one-to-one function?      (e) Does  $f(x)$  have an inverse that is a function?  
 (f) Give a table for  $f^{-1}(x)$ .      (g) Give the domain of  $f^{-1}$ .  
 (h) Give the range of  $f^{-1}$ .  
 (i) How does the domain of  $f$  compare to the range of  $f^{-1}$ ?  
 (j) How does the range of  $f$  compare to the domain of  $f^{-1}$ ?  
 (k) On the same coordinate system as you graphed  $y = f(x)$ , graph  $y = f^{-1}(x)$ .  
 (l) How do the graphs of  $y = f(x)$  and  $y = f^{-1}(x)$  compare?

2. Let  $f(x) = x^2 + 1$ , where  $x \geq 0$ .

- (a) Give the domain of  $f$ .      (b) Give the range of  $f$ .      (c) Graph  $y = f(x)$ .  
 (d) Is  $f(x)$  a one-to-one function?      (e) Is  $f(x)$  invertible?  
 (f) Determine the formula for  $f^{-1}(x)$ .      (g) Give the domain of  $f^{-1}$ .  
 (h) Give the range of  $f^{-1}$ .  
 (i) How does the domain of  $f$  compare to the range of  $f^{-1}$ ?  
 (j) How does the range of  $f$  compare to the domain of  $f^{-1}$ ?  
 (k) On the same coordinate system as you graphed  $y = f(x)$ , graph  $y = f^{-1}(x)$ .  
 (l) How do the graphs of  $y = f(x)$  and  $y = f^{-1}(x)$  compare?

3. The graph of  $y = f(x)$  is shown at the right. On the same coordinate system, draw the graph of  $y = f^{-1}(x)$ .



4. Let  $f(x) = \frac{2x - 3}{4x - 5}$ . (a) Determine the formula for  $y = f^{-1}(x)$ .  
 (b) What is the domain of  $f$ ?      (c) What is the range of  $f^{-1}$ ?