

Name:

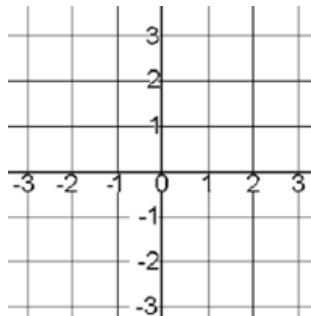
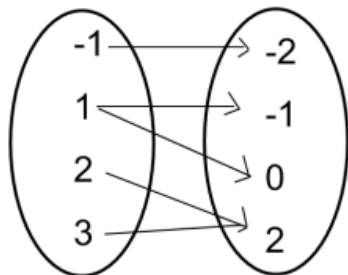
Period:

Date:

## Practice Worksheet: Relations & Functions

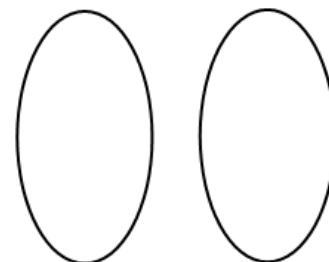
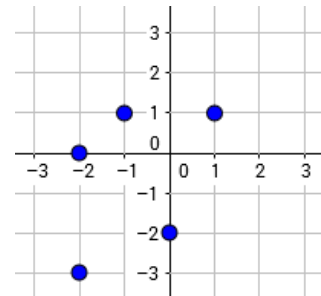
Use the given form of each relation to complete the other forms. Then determine if the relation is a function.

1] Rewrite the relation given in the mapping diagram as a scatterplot.



Is the relation also a function?

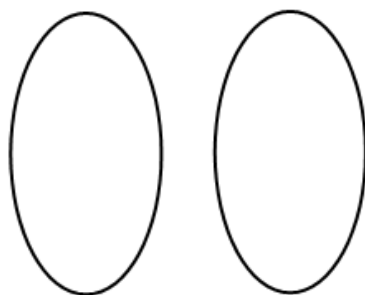
2] Rewrite the relation given in the scatter plot as a mapping diagram.



Is the relation also a function?

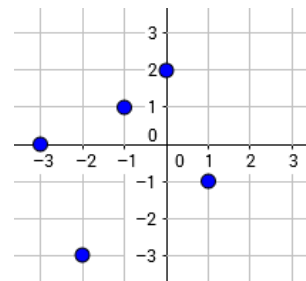
3] Rewrite the relation given in the table as a mapping diagram.

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



Is the relation also a function?

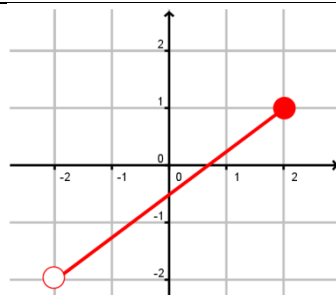
4] Rewrite the relation given in the scatter plot as a set of ordered pairs.



Is the relation also a function?

Determine if each graph shows a function or a relation only. Then identify the domain and range.

5]

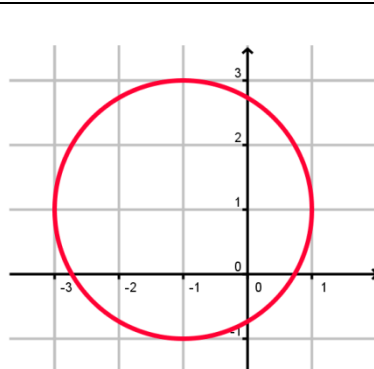


Domain:

Range:

Function?

6]

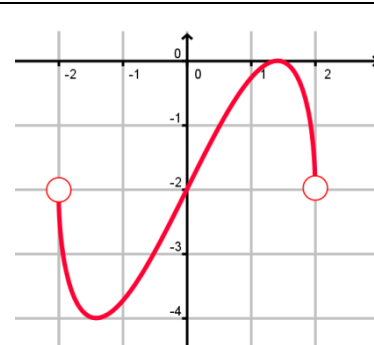


Domain:

Range:

Function?

7]

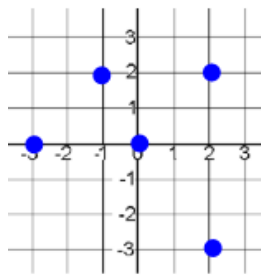
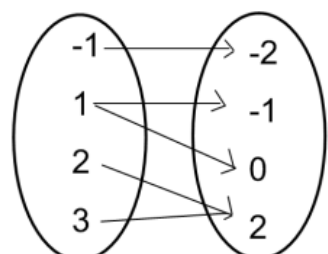
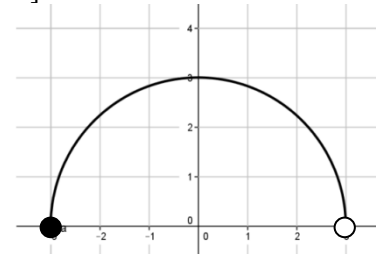
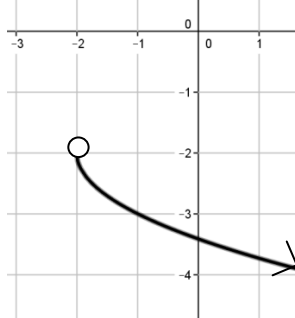


Domain:

Range:

Function?

Identify the domain and range, then evaluate each function for the given value of x.

<p>8] <math>f = \{(10,7), (-2,4), (5,3), (4,10)\}</math></p> <p>Domain:</p> <p>Range:</p> <p>Find <math>f(5)</math>.</p>	<p>9]</p> <p>Domain:</p> <p>Range:</p> <p>Find <math>f(1)</math>.</p> <table><tr><th>x</th><th>y</th></tr><tr><td>-3</td><td>3</td></tr><tr><td>-1</td><td>1</td></tr><tr><td>0</td><td>0</td></tr><tr><td>1</td><td>1</td></tr></table>	x	y	-3	3	-1	1	0	0	1	1	<p>10]</p> <p>Domain:</p> <p>Range:</p> <p>Find <math>f(-3)</math>.</p> 
x	y											
-3	3											
-1	1											
0	0											
1	1											
<p>11]</p>  <p>Domain:</p> <p>Range:</p> <p>Find <math>f(3)</math>.</p>	<p>12]</p>  <p>Domain:</p> <p>Range:</p> <p>Find <math>f(0)</math>.</p>	<p>13]</p>  <p>Domain:</p> <p>Range:</p> <p>Find <math>f(-1)</math>.</p>										

Evaluate each function for the given value of x. Show your work.

14]  $f(x) = 3\sqrt{x} - 5$ ;  $f(9)$

15]  $f(x) = 4x^2 + x - 2$ ;  $f(-2)$

16]  $f(x) = 3 - 3x$ ;  $f\left(\frac{1}{6}\right)$

17]  $f(x) = |x + 2|$ ;  $f(-4)$

18]  $f(x) = \frac{2}{x-2}$ ;  $f(6)$

19]  $f(x) = \frac{2}{3}x - 5$ ;  $f\left(-\frac{9}{2}\right)$

**Finding the Domain of a Function:** If a function  $f$  is given by an equation and the domain is not given, find the domain by choosing all real numbers except:

- Any  $x$ -value that makes a denominator equal to zero,
- Any  $x$ -value that results in a negative number under a square root (or any other even root)
- Any  $x$ -value that makes the argument of a logarithmic function negative or zero (We will study these functions in chapter 12).

Example 1: Find the domain of each function:

a.  $f(x) = x + 7$


b.  $f(x) = \sqrt{x-1}$

c.  $f(x) = \frac{x}{x^2-1}$

d.  $f(x) = \frac{1}{\sqrt{2x-7}}$

e.  $f(x) = \frac{2x-4}{x^2-2x-3}$

①  $f(x) = x + 7$  no denomi  
 ↙ no even radica  
 D: All real numbers  
 D:  $(-\infty, \infty)$

②  $f(x) = \sqrt{x-1}$  no denominator  
 But even radical  
 (Radicand  $\geq 0$ )  
 $x-1 \geq 0$   
 $x \geq 1$   
  
 D:  $[1, \infty)$

③  $f(x) = \frac{x}{x^2-1}$

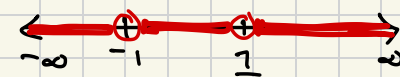
denominator - yes  
 ↪ cannot be zero  
 ↪ solve the denominator

$$x^2 - 1 = 0$$

$$(x+1)(x-1) = 0$$

$$x = 1, x = -1$$


↪ These two values  
 must be excluded

  
 D:  $(-\infty, -1) \cup (-1, 1) \cup (1, \infty)$

④  $f(x) = \frac{1}{\sqrt{2x-1}}$

deno  $\neq 0$   
 Rad  $\geq 0$  }  $> 0$

$\Rightarrow 2x-1 > 0$   
 $2x > 1$   
 $x > \frac{1}{2}$

  
 D:  $[\frac{1}{2}, \infty)$