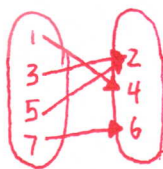


~~Give the domain and range of each relation. Is the relation a function? If not, explain why.~~

Sample $\{(3, 2), (1, 4), (5, 2), (7, 6)\}$

Solution $D = \{1, 3, 5, 7\}, R = \{2, 4, 6\}$; yes

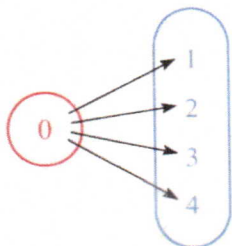


Yes, each input is assigned exactly one output.

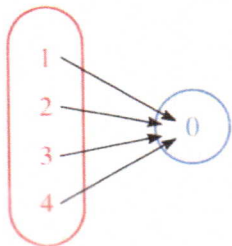
- | | |
|--|---|
| 1. $\{(1, 3), (2, 5), (3, 5), (4, 3)\}$ | 2. $\{(2, 4), (1, 3), (0, 2), (1, 1)\}$ |
| 3. $\{(-1, 0), (1, 0), (0, -1), (-1, 1)\}$ | 4. $\{(4, 1), (3, 2), (2, 3), (1, 4)\}$ |
| 5. $\{(a, b), (b, a)\}$ | 6. $\{(a, a + 1), (a, a - 1)\}$ |

~~List the ordered pairs in the relation pictured in each diagram. Is the relation a function? If not, explain why.~~

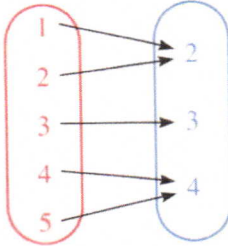
7.



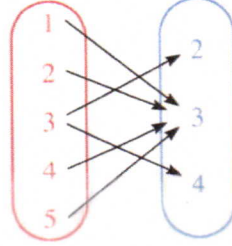
8.



9.

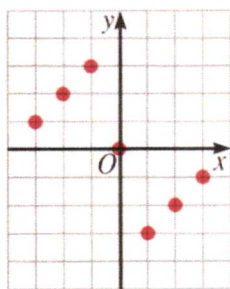


10.

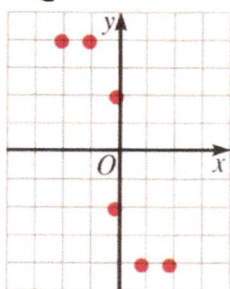


~~List the ordered pairs in the relation pictured in each graph. Is the relation a function? If not, explain why.~~

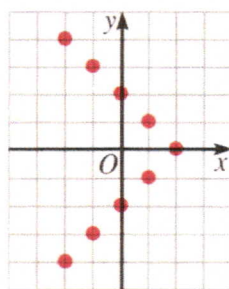
11.



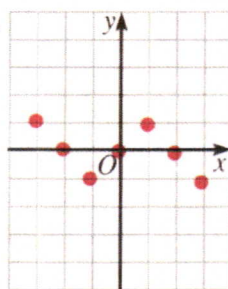
12.



13.

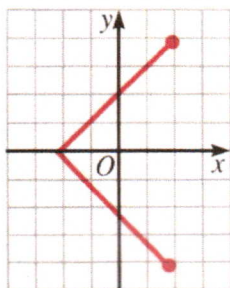


14.

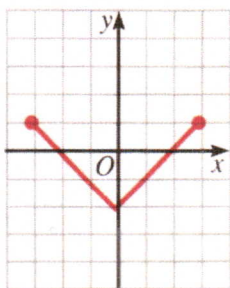


Give the domain and range of each relation graphed below. Is the relation a function?

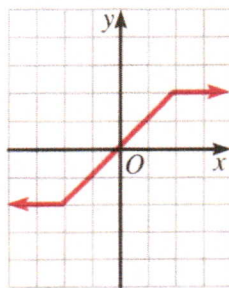
15.



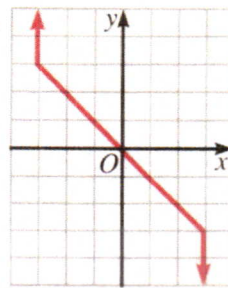
16.



17.



18.



~~Graph~~ ^{Map} each relation. Then tell whether it is a function. If it is not a function, draw a vertical line that intersects the graph more than once.

- A**
- $\{(1, 2), (2, 0), (1, 1)\}$
 - $\{(-1, 2), (0, 1), (1, 2)\}$
 - $\{(-2, 1), (|-2|, 0), (-1, |-2|), (|-1|, -2)\}$
 - $\{(2, 1), (1, -1), (0, 2), (2, 0)\}$
 - $\{(|-3|, 2), (3, -2), (-2, -1), (2, |-1|)\}$
 - $\{(1, 2), (2, -1), (-1, 1), (1, -1), (0, 1)\}$

Written Exercises

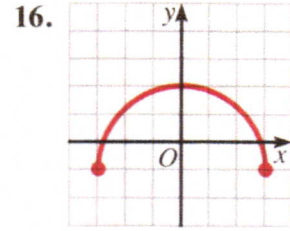
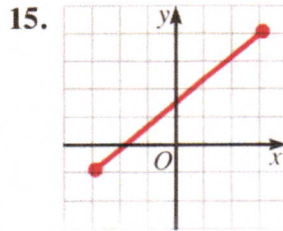
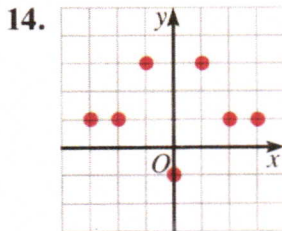
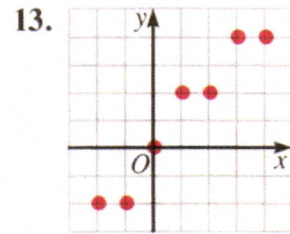
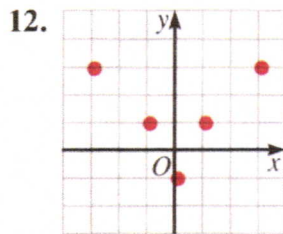
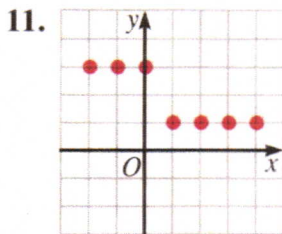
Don't Do (unless you want to!)

In Exercises 1–12, the domains D and rules of some functions are given. *Map them.*
~~Find the range of each function.~~

- A**
- $F: x \rightarrow 3 - 2x; D = \{0, 1, 2, 3\}$
 - $g: x \rightarrow x^2 - 2; D = \{-2, 0, 2\}$
 - $f: x \rightarrow x^2 - 3x; D = \{-1, 0, 1, 2, 3\}$
 - $G: x \rightarrow x^2 - 4x + 4; D = \{0, 1, 2, 3\}$
 - $g: x \rightarrow x^4 - x^2; D = \{-2, 0, 2\}$
 - $m: z \rightarrow 1 - |z|; D = \{-2, -1, 0, 2\}$

- $\phi(x) = 3x - 5$
- Just Even
- $\phi: x \rightarrow 3x - 5; D = \{0, 1, 2, 3\}$
 - $f: x \rightarrow 1 - x^2; D = \{-1, 0, 1\}$
 - $h: x \rightarrow 4x - x^2; D = \{-1, -2, 0\}$
 - $k: t \rightarrow t^2 + t - 2; D = \{-2, -1, 0, 1\}$
 - $H: z \rightarrow z^2 - z^3; D = \{-1, 0, 1, 2\}$
 - $r: t \rightarrow |1 - t|; D = \{-2, -1, 0, 1, 2\}$

Give the domain and range of the function whose complete graph is shown in red.



Graph the following functions. Label the domain and range for each.

1) $f(x) = \frac{5}{3}x + 2$

2) $g(x) = \sqrt{x + 6}$

3) $p(x) = \frac{1}{2}x^2 - 4$

4) $q(x) = x^3 - 8x - 1$

5) $h(x) = \frac{1}{x^2}$