

# Key

Algebra II Academic  
Study Guide - Sections 1.6, 1.7 and 1.9

Name \_\_\_\_\_  
Date \_\_\_\_\_ Period \_\_\_\_\_

For each of the following relations:

- A. Determine if the relation is a function. Write out "Function" or "Not a Function".  
B. If it is a function, state whether it is a one-to-one function or a many-to-one function.  
If it is not a function, explain why.  
C. Find the domain and range. Be sure to use the appropriate notation.

1.  $\{(-2,8), (-1, 4), (0,0), (1,-4), (2,-8)\}$

Function

one-to-one

$D: \{-2, -1, 0, 1, 2\}$   $R: \{-8, -4, 0, 4, 8\}$

2.  $\{(-5,0), (-5,1), (-5,2), (-5,3), (-5,4)\}$

Not a function

Repeats in domain

$D: \{-5\}$   $R: \{0, 1, 2, 3, 4\}$

3.

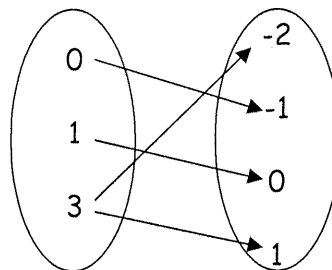
X	Y
-3	9
-1	1
0	0
1	1
3	9

Function

many-to-one

$D: \{-3, -1, 0, 1, 3\}$   $R: \{0, 1, 9\}$

4.

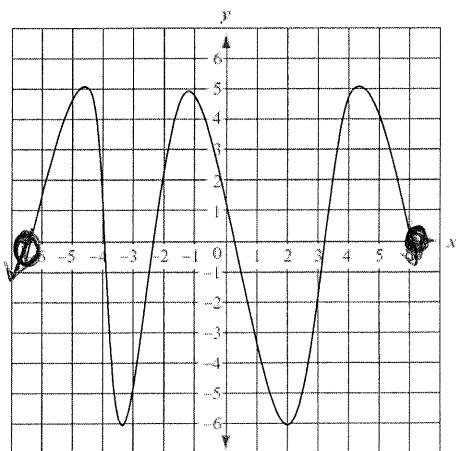


Not a function

2 arrows coming from 3 in x-values

$D: \{0, 1, 3\}$   $R: \{-2, -1, 0, 1\}$

5.

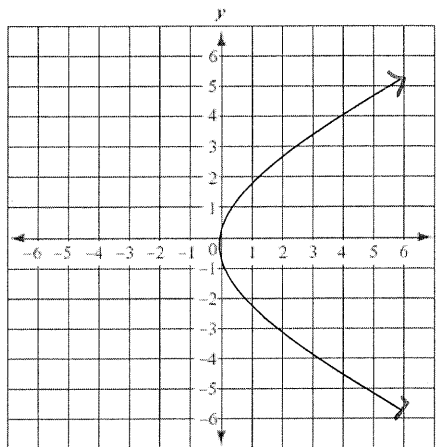


Function

many-to-one

$D: (-\infty, \infty)$   $R: [-5, 5]$

6.

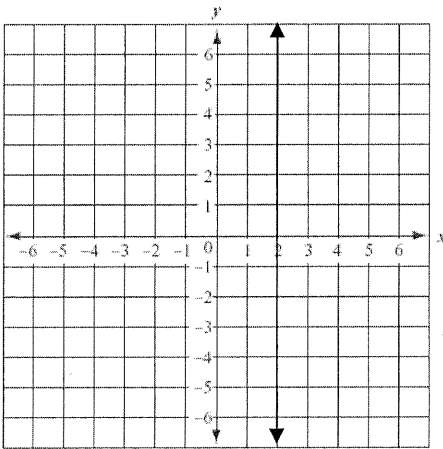


Not a function

Does not pass vertical line test (VLT)

$D: [0, \infty)$   $R: (-\infty, \infty)$

7.

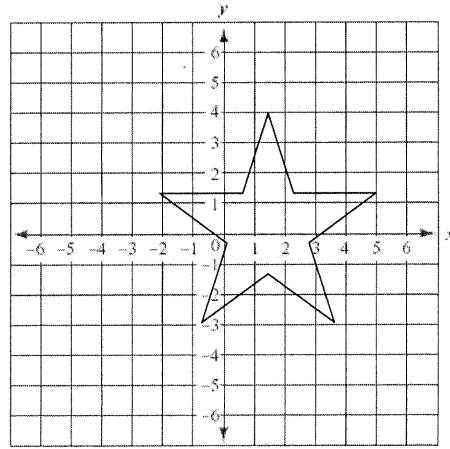


Not a function

Does not pass VLT

D: {2} R:  $(-\infty, \infty)$

8.



Not a function

Does not pass VLT

D:  $[-2, 5]$  R:  $[-3, 4]$

For the following functions:

A. Determine the domain and range for the function. You may use a graphing calculator.

B. Determine the name of the function.

9.  $y = -x^2 - 3$     D:  $(-\infty, \infty)$     R:  $(-\infty, -3]$     Name: Quadratic

10.  $f(x) = \sqrt{x+2}$     D:  $[-2, \infty)$     R:  $[0, \infty)$     Name: Radical

11.  $f(x) = -x^3 - 1$     D:  $(-\infty, \infty)$     R:  $(-\infty, \infty)$     Name: Cubic

12.  $y = 4x + 5$     D:  $(-\infty, \infty)$     R:  $(-\infty, \infty)$     Name: Linear

13.  $y = x^2 + 4$     D:  $(-\infty, \infty)$     R:  $[4, \infty)$     Name: Quadratic

14.  $y = -\sqrt{x}$     D:  $[0, \infty)$     R:  $(-\infty, 0]$     Name: Radical

15.  $y = x^3 + 6$     D:  $(-\infty, \infty)$     R:  $(-\infty, \infty)$     Name: Cubic

16.  $y = -4$     D:  $(-\infty, \infty)$     R:  $\{-4\}$     Name: Linear

Evaluate the following functions. Show all work.

$$17. f(x) = \frac{2}{3}x - 5$$

$$a. f(-6) = \underline{-9} \quad \frac{2}{3}(-6) - 5 =$$

$$b. f(18) = \underline{7} \quad \frac{2}{3}(18) - 5$$

$$18. f(x) = -3x^2 + 2x - 5$$

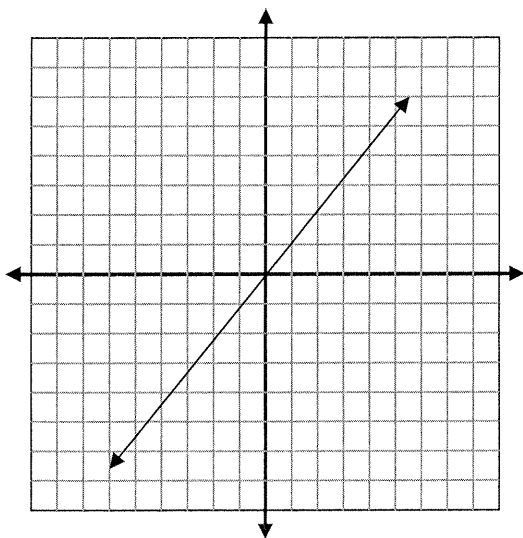
$$a. f(2) = \underline{-13} \quad \begin{array}{l} -3(2)^2 + 2(2) - 5 \\ -3(4) + 4 - 5 \end{array}$$

$$b. f(-3a) = \underline{-27a^2 - 6a - 5} \quad \begin{array}{l} -3(-3a)^2 + 2(-3a) - 5 \\ -3(9a^2) - 6a - 5 \end{array}$$

$$c. f(x+2) = \underline{-3x^2 - 10x - 13} \quad \begin{array}{l} -3(x+2)^2 + 2(x+2) - 5 \\ -3(x^2 + 4x + 4) + 2x + 4 - 5 \rightarrow -3x^2 - 12x - 12 + 2x + 4 - 5 \end{array}$$

For the following function, evaluate  $f(0)$ ,  $f(2)$ , and  $f(-1)$ .

19.)



$$f(0) = 0$$

$$f(2) = 2$$

$$f(-1) = -1$$

Scales: 1