

F.IF.A.2: Domain and Range 1

- What is the domain of the relation shown below?
 $\{(4,2), (1,1), (0,0), (1,-1), (4,-2)\}$
 - $\{0,1,4\}$
 - $\{-2,-1,0,1,2\}$
 - $\{-2,-1,0,1,2,4\}$
 - $\{-2,-1,0,0,1,1,1,2,4,4\}$
- Let f be a function such that $f(x) = 2x - 4$ is defined on the domain $2 \leq x \leq 6$. The range of this function is
 - $0 \leq y \leq 8$
 - $0 \leq y < \infty$
 - $2 \leq y \leq 6$
 - $-\infty < y < \infty$
- If the function $f(x) = x^2$ has the domain $\{0,1,4,9\}$, what is its range?
 - $\{0,1,2,3\}$
 - $\{0,1,16,81\}$
 - $\{0,-1,1,-2,2,-3,3\}$
 - $\{0,-1,1,-16,16,-81,81\}$
- If the domain of the function $f(x) = 2x^2 - 8$ is $\{-2,3,5\}$, then the range is
 - $\{-16,4,92\}$
 - $\{-16,10,42\}$
 - $\{0,10,42\}$
 - $\{0,4,92\}$
- The function $f(x) = 2x^2 + 6x - 12$ has a domain consisting of the integers from -2 to 1 , inclusive. Which set represents the corresponding range values for $f(x)$?
 - $\{-32,-20,-12,-4\}$
 - $\{-16,-12,-4\}$
 - $\{-32,-4\}$
 - $\{-16,-4\}$
- If $f(x) = \frac{1}{3}x + 9$, which statement is always true?
 - $f(x) < 0$
 - $f(x) > 0$
 - If $x < 0$, then $f(x) < 0$.
 - If $x > 0$, then $f(x) > 0$.
- The range of the function $f(x) = |x + 3| - 5$ is
 - $[-5, \infty)$
 - $(-5, \infty)$
 - $[3, \infty)$
 - $(3, \infty)$
- If $f(x) = x^2 + 2$, which interval describes the range of this function?
 - $(-\infty, \infty)$
 - $[0, \infty)$
 - $[2, \infty)$
 - $(-\infty, 2]$

9 What is the range of the function

$$f(x) = (x - 4)^2 + 1?$$

- 1) $x > 4$
- 2) $x \geq 4$
- 3) $f(x) > 1$
- 4) $f(x) \geq 1$

10 The domain of the function $f(x) = x^2 + x - 12$ is

- 1) $(-\infty, -4]$
- 2) $(-\infty, \infty)$
- 3) $[-4, 3]$
- 4) $[3, \infty)$

11 The range of $f(x) = x^2 + 2x - 5$ is the set of all real numbers

- 1) less than or equal to -6
- 2) greater than or equal to -6
- 3) less than or equal to -1
- 4) greater than or equal to -1

12 The range of the function $f(x) = x^2 + 2x - 8$ is all real numbers

- 1) less than or equal to -9
- 2) greater than or equal to -9
- 3) less than or equal to -1
- 4) greater than or equal to -1

13 Which interval represents the range of the function

$$h(x) = 2x^2 - 2x - 4?$$

- 1) $(0.5, \infty)$
- 2) $(-4.5, \infty)$
- 3) $[0.5, \infty)$
- 4) $[-4.5, \infty)$

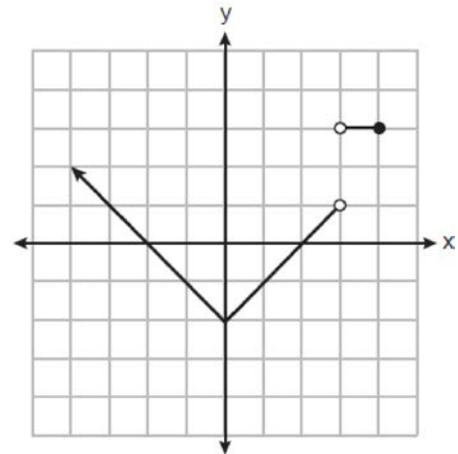
14 The range of the function defined as $y = 5^x$ is

- 1) $y < 0$
- 2) $y > 0$
- 3) $y \leq 0$
- 4) $y \geq 0$

15 Which function has a domain of all real numbers and a range greater than or equal to three?

- 1) $f(x) = -x + 3$
- 2) $g(x) = x^2 + 3$
- 3) $h(x) = 3^x$
- 4) $m(x) = |x + 3|$

16 Bryan said that the piecewise function graphed below has a domain of all real numbers.



State *two* reasons why Bryan is *incorrect*.

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Answer Section

1 ANS: 1 REF: 081710ai

2 ANS: 1

$$f(2) = 0$$

$$f(6) = 8$$

REF: 081411ai

3 ANS: 2 REF: 081806ai

4 ANS: 3

$$f(-2) = 0, f(3) = 10, f(5) = 42$$

REF: 011812ai

5 ANS: 2

$$f(-2) = f(-1) = -16, f(0) = -12, f(1) = -4$$

REF: 011914ai

6 ANS: 4

$\frac{1}{3}$ of a positive number +9 is a positive number.

REF: 061417ai

7 ANS: 1 REF: 012018ai

8 ANS: 3 REF: 061816ai

9 ANS: 4

Vertex (4,1)

REF: 012424ai

10 ANS: 2 REF: 062320ai

11 ANS: 2

$$x = \frac{-2}{2(1)} = -1; f(-1) = (-1)^2 + 2(-1) - 5 = -6$$

REF: 082316ai

12 ANS: 2

$$f(x) = x^2 + 2x - 8 = x^2 + 2x + 1 - 9 = (x + 1)^2 - 9$$

REF: 061611ai

13 ANS: 4

$$x = \frac{-(-2)}{2(2)} = 0.5 \quad h(0.5) = -4.5$$

REF: 081923ai

14 ANS: 2 REF: 011619ai

15 ANS: 2

All four functions have a real domain. f has a real range. h has a positive real range. m has a nonnegative real range.

REF: 062424ai

16 ANS:

The function is not defined at $x = 3$ or $x > 4$.

REF: 082327ai