

F.IF.A.2: Domain and Range 4a

- 1 What is the range of $f(x) = |x - 3| + 2$?
 - 1) $\{x | x \geq 3\}$
 - 2) $\{y | y \geq 2\}$
 - 3) $\{x | x \in \text{real numbers}\}$
 - 4) $\{y | y \in \text{real numbers}\}$

- 2 The range of the function $f(x) = 3|x - 4| - 5$ is
 - 1) $x \geq 0$
 - 2) $f(x) \geq 0$
 - 3) $x \geq -5$
 - 4) $f(x) \geq -5$

- 3 What is the range of $f(x) = (x + 4)^2 + 7$?
 - 1) $y \geq -4$
 - 2) $y \geq 4$
 - 3) $y = 7$
 - 4) $y \geq 7$

- 4 For what values of x will the function $f(x) = \sqrt{x - 4}$ be real?
 - 1) $\{x | x < 0\}$
 - 2) $\{x | x > 0\}$
 - 3) $\{x | x \leq 4\}$
 - 4) $\{x | x \geq 4\}$

- 5 What is the domain of the function $f(x) = \sqrt{x - 2}$?
 - 1) $\{x | x \geq 0\}$
 - 2) $\{x | x \geq 2\}$
 - 3) $\{x | x \leq 2\}$
 - 4) $\{x | x \geq -2\}$

- 6 In the set of real numbers, what is the domain of $f(x) = \sqrt{x + 5}$?
 - 1) $x \geq -5$
 - 2) $x \leq -5$
 - 3) $x > -5$
 - 4) $x \geq 0$

- 7 What is the domain of the function $f(x) = \sqrt{x - 2} + 3$?
 - 1) $(-\infty, \infty)$
 - 2) $(2, \infty)$
 - 3) $[2, \infty)$
 - 4) $[3, \infty)$

- 8 If $f(x) = \sqrt{9 - x^2}$, what are its domain and range?
 - 1) domain: $\{x | -3 \leq x \leq 3\}$; range: $\{y | 0 \leq y \leq 3\}$
 - 2) domain: $\{x | x \neq \pm 3\}$; range: $\{y | 0 \leq y \leq 3\}$
 - 3) domain: $\{x | x \leq -3 \text{ or } x \geq 3\}$; range: $\{y | y \neq 0\}$
 - 4) domain: $\{x | x \neq 3\}$; range: $\{y | y \geq 0\}$

- 9 What is the domain of $h(x) = \sqrt{x^2 - 4x - 5}$?
 - 1) $\{x | x \geq 1 \text{ or } x \leq -5\}$
 - 2) $\{x | x \geq 5 \text{ or } x \leq -1\}$
 - 3) $\{x | -1 \leq x \leq 5\}$
 - 4) $\{x | -5 \leq x \leq 1\}$

- 10 Which statement about the function $f(x) = \frac{x - 3}{x + 2}$ is true?
 - 1) Its domain does not include 2.
 - 2) Its domain does not include 3.
 - 3) Its range does not include 1.
 - 4) Its range does not include $-\frac{3}{2}$.

11 The domain of the equation $y = \frac{1}{(x-1)^2}$ is all real

numbers

- 1) greater than 1
- 2) except 1
- 3) less than 1
- 4) except 1 and -1

12 What is the domain of the function $f(x) = \frac{2x^2}{x^2 - 9}$?

- 1) all real numbers except 0
- 2) all real numbers except 3
- 3) all real numbers except 3 and -3
- 4) all real numbers

13 What is the domain of the function $f(x) = \frac{3x^2}{x^2 - 49}$?

- 1) $\{x | x \in \text{real numbers}, x \neq 7\}$
- 2) $\{x | x \in \text{real numbers}, x \neq \pm 7\}$
- 3) $\{x | x \in \text{real numbers}\}$
- 4) $\{x | x \in \text{real numbers}, x \neq 0\}$

14 Which negative real number is *not* in the domain of $\frac{3}{x^2 - 4}$?

15 For $y = \frac{3}{\sqrt{x-4}}$, what are the domain and range?

- 1) $\{x | x > 4\}$ and $\{y | y > 0\}$
- 2) $\{x | x \geq 4\}$ and $\{y | y > 0\}$
- 3) $\{x | x > 4\}$ and $\{y | y \geq 0\}$
- 4) $\{x | x \geq 4\}$ and $\{y | y \geq 0\}$

16 What is the domain of the function $f(x) = \frac{4}{\sqrt{x+1}}$

over the set of real numbers?

- 1) $\{x | x = 1\}$
- 2) $\{x | x \geq -1\}$
- 3) $\{x | x < -1\}$
- 4) $\{x | x > -1\}$

17 What is the domain of the function $f(x) = \frac{4}{\sqrt{x+5}}$

over the set of real numbers?

- 1) $\{x | x > -5\}$
- 2) $\{x | x < -5\}$
- 3) $\{x | x \geq -5\}$
- 4) $\{x | x = -5\}$

18 In the set of real numbers, what is the domain of

$$f(x) = \frac{4x}{\sqrt{x-4}}$$

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

19 The domain of $f(x) = -\frac{3}{\sqrt{2-x}}$ is the set of all real

numbers

- 1) greater than 2
- 2) less than 2
- 3) except 2
- 4) between -2 and 2

20 If $f(x) = \frac{1}{\sqrt{2x-4}}$, the domain of $f(x)$ is

- 1) $x = 2$
- 2) $x < 2$
- 3) $x \geq 2$
- 4) $x > 2$

21 What is the domain of the function $f(x) = \frac{4}{\sqrt{2x-1}}$

over the set of real numbers?

- 1) $\left\{x \mid x = \frac{1}{2}\right\}$
- 2) $\left\{x \mid x \geq \frac{1}{2}\right\}$
- 3) $\left\{x \mid x < \frac{1}{2}\right\}$
- 4) $\left\{x \mid x > \frac{1}{2}\right\}$

22 What is the domain of $f(x) = \frac{1}{\sqrt{4-x^2}}$?

- 1) $x < 2$
- 2) $|x| \leq 2$
- 3) $-2 < x < 2$
- 4) all real numbers

23 What is the range of the function $y = 2 \cos 3x$?

- 1) $-1 \leq y \leq 1$
- 2) $-2 \leq y \leq 2$
- 3) $-3 \leq y \leq 3$
- 4) $-\frac{3}{2} \leq y \leq \frac{3}{2}$

24 What is the range of the function $y = 2 \sin 3x$?

- 1) all real numbers
- 2) $-1 \leq y \leq 1$
- 3) $-2 \leq y \leq 2$
- 4) $-3 \leq y \leq 3$

25 What is the range of the function $y = 4 \cos x$?

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

26 Which is *not* in the range of the function $y = \cos x$?

- 1) 1
- 2) 2
- 3) $\frac{1}{2}$
- 4) $-\frac{1}{2}$

27 Which number is *not* an element of the range of $y = \sin x$?

- 1) 1
- 2) 2
- 3) -1
- 4) 0

28 In which function is the range equal to the domain?

- 1) $y = 2^x$
- 2) $y = x^2$
- 3) $y = \log x$
- 4) $y = x$

F.IF.A.2: Domain and Range 4a

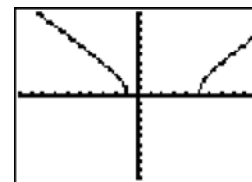
Answer Section

- 1 ANS: 2 REF: 011222a2
 2 ANS: 4 REF: 011719a2
 3 ANS: 4 REF: 061112a2
 4 ANS: 4 REF: 069031siii
 5 ANS: 2 REF: 068031siii
 6 ANS: 1 REF: 060135siii
 7 ANS: 3 REF: fall0923a2
 8 ANS: 1 REF: 011313a2
 9 ANS: 2

For real solutions, the expression under the radical must be greater than or equal to zero.

$x^2 - 4x - 5 \geq 0$
 $(x - 5)(x + 1) \geq 0$. For the product of these two binomials to be positive, both binomials must be either

positive or negative. $x - 5 \geq 0$ and $x + 1 \geq 0$ $x - 5 \leq 0$ and $x + 1 \leq 0$
 $x \geq 5$ and $x \geq -1$ or $x \leq 5$ and $x \leq -1$
 $x \geq 5$ $x \leq -1$



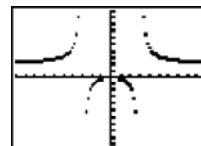
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- 10 ANS: 3
 $1 = \frac{x-3}{x+2}$
 $x+2 = x-3$
 $0 \neq -5$

REF: 081623a2

- 11 ANS: 2 REF: 069725siii
 12 ANS: 3

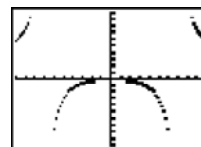
If $x = 3$ or -3 , the denominator of the function is zero, which is undefined.



REF: 060407b

- 13 ANS: 2

If $x = 7$ or -7 , the denominator of the function is zero, which is undefined.

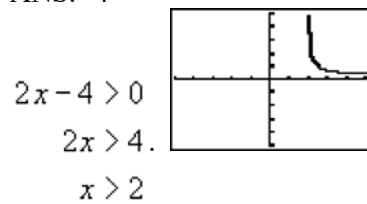


REF: 010504b

14 ANS:
-2

REF: 010005siii

15 ANS: 1 REF: 011416a2
 16 ANS: 4 REF: 068728siii
 17 ANS: 1 REF: 010228siii
 18 ANS: 4 REF: 010424siii
 19 ANS: 2 REF: 011521a2
 20 ANS: 4



REF: 010314b

21 ANS: 4 REF: 080227siii
 22 ANS: 3 REF: 069829siii
 23 ANS: 2 REF: 069429siii
 24 ANS: 3 REF: 010125siii
 25 ANS: 2 REF: 060324siii
 26 ANS: 2 REF: 018420siii
 27 ANS: 2 REF: 019617siii
 28 ANS: 4 REF: 088716siii