Name: _____

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

1 What is the range of $f(x) = |x - 3| + 2$?

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

3 What is the range of $f(x) = (x + 4)^2 + 7$?

4 For what values of x will the function $f(x) = \sqrt{x - 4}$ be real?

5 What is the domain of the function $f(x) = \sqrt{x - 2}$?

6 In the set of real numbers, what is the domain of $f(x) = \sqrt{x + 5}$?

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

8 If $f(x) = \sqrt{9 - x^2}$, what are its domain and range?

9 What is the domain of $h(x) = \sqrt{x^2 - 4x - 5}$?

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

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

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

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

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

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

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

18 In the set of real numbers, what is the domain of $f(x) = \frac{4x}{\sqrt{x-4}}$?

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

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

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

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

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

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

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

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 4b
Answer Section

1 ANS:
$\{y \mid y \geq 2\}$

REF: 011222a2

2 ANS:
$f(x) \geq -5$

REF: 011719a2

3 ANS:
$y \geq 7$

REF: 061112a2

4 ANS:
$\{x \mid x \geq 4\}$

REF: 069031siii

5 ANS:
$\{x \mid x \geq 2\}$

REF: 068031siii

6 ANS:
$x \geq -5$

REF: 060135siii

7 ANS:
$[2, \infty)$

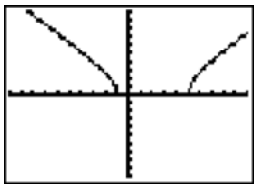
REF: fall0923a2

8 ANS:
domain: $\{x \mid -3 \leq x \leq 3\}$; range: $\{y \mid 0 \leq y \leq 3\}$

REF: 011313a2

9 ANS:
$\{x \mid x \geq 5 \text{ or } x \leq -1\}$

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



REF: 010218b

10 ANS: 3

$$1 = \frac{x-3}{x+2}$$

$x + 2 = x - 3$

$0 \neq -5$

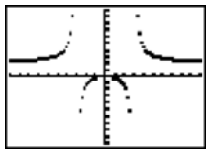
REF: 081623a2

11 ANS:
except 1

REF: 069725siii

12 ANS:
all real numbers except 3 and –3

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



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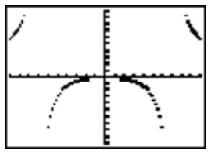
13 ANS:
$\{x \mid x \in \text{real numbers}, x \neq \pm 7\}$

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



REF: 010504b

14 ANS:
–2

REF: 010005siii

15 ANS:
$\{x \mid x > 4\}$ and $\{y \mid y > 0\}$

REF: 011416a2

16 ANS:
$\{x \mid x > -1\}$

REF: 068728siii

17 ANS:
$\{x \mid x > -5\}$

REF: 010228siii

18 ANS:
$x > 4$

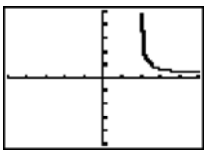
REF: 010424siii

19 ANS:
less than 2

REF: 011521a2

20 ANS:
$x > 2$

$2x - 4 > 0$
$2x > 4.$
$x > 2$



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21 ANS:
$\left\{x \mid x > \frac{1}{2}\right\}$

REF: 080227siii

22 ANS:
$-2 < x < 2$

REF: 069829siii

23 ANS:
$-2 \le y \le 2$

REF: 069429siii

24 ANS:
$-2 \le y \le 2$

REF: 010125siii

25 ANS:
$-4 \le y \le 4$

REF: 060324siii

26 ANS: 2 REF: 018420siii

27 ANS: 2 REF: 019617siii

28 ANS: 4 REF: 088716siii