

A2.A.39: Domain and Range 2: Determine the domain and range of a function from its equation

- 1 What is the domain of $f(x) = 2^x$?
 - 1) all integers
 - 2) all real numbers
 - 3) $x \geq 0$
 - 4) $x \leq 0$
- 2 What is the domain of the function $g(x) = 3^x - 1$?
 - 1) $(-\infty, 3]$
 - 2) $(-\infty, 3)$
 - 3) $(-\infty, \infty)$
 - 4) $(-1, \infty)$
- 3 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) $x \geq 0$
- 4 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) $\{x|x \geq -2\}$
- 5 What is the domain of the function $f(x) = \sqrt{x-2} + 3$?
 - 1) $(-\infty, \infty)$
 - 2) $(2, \infty)$
 - 3) $[2, \infty)$
 - 4) $[3, \infty)$
- 6 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) $\{x|-5 \leq x \leq 1\}$
- 7 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
- 8 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) $\{x|x \in \text{real numbers}, x \neq 0\}$
- 9 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
- 10 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) $\{x|x > -1\}$

- 11 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) $x > 4$

- 12 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) $x > 2$

- 13 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) $\{x|x = -5\}$

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

over the set of real numbers?

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

- 15 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

- 16 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

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

- 18 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) $\{y|y \in \text{real numbers}\}$

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

- 1) $y \geq -4$
- 2) $y \geq 4$
- 3) $y = 7$
- 4) $y \geq 7$

- 20 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) $-3 \leq y \leq 3$

21 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) $-\frac{3}{2} \leq y \leq \frac{3}{2}$

22 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) $y \leq 4$

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

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

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

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

25 Which value of x is *not* in the domain of the function defined by $y = \tan x$?

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

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

- 1) domain: $\{x \mid -3 \leq x \leq 3\}$; range: $\{y \mid 0 \leq y \leq 3\}$
- 2) domain: $\{x \mid x \neq \pm 3\}$; range: $\{y \mid 0 \leq y \leq 3\}$
- 3) domain: $\{x \mid x \leq -3 \text{ or } x \geq 3\}$; range: $\{y \mid y \neq 0\}$
- 4) domain: $\{x \mid x \neq 3\}$; range: $\{y \mid y \geq 0\}$

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

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

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

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

A2.A.39: Domain and Range 2: Determine the domain and range of a function from its equation

Answer Section

1	ANS: 2	REF: 080204b
2	ANS: 2	REF: 081517a2
3	ANS: 1	REF: 060135siii
4	ANS: 2	REF: 068031siii
5	ANS: 3	REF: fall0923a2
6	ANS: 2	REF: 010218b
7	ANS: 3	REF: 060407b
8	ANS: 2	REF: 010504b
9	ANS: 2	REF: 069725siii
10	ANS: 4	REF: 068728siii
11	ANS: 4	REF: 010424siii
12	ANS: 4	REF: 010314b
13	ANS: 1	REF: 010228siii
14	ANS: 4	REF: 080227siii
15	ANS: 2	REF: 011521a2
16	ANS: 3	REF: 069829siii
17	ANS: -2	

REF: 010005siii

18	ANS: 2	REF: 011222a2
19	ANS: 4	REF: 061112a2
20	ANS: 3	REF: 010125siii
21	ANS: 2	REF: 069429siii
22	ANS: 2	REF: 060324siii
23	ANS: 2	REF: 018420siii
24	ANS: 2	REF: 019617siii
25	ANS: 2	REF: 018635siii
26	ANS: 1	REF: 011313a2
27	ANS: 1	REF: 011416a2
28	ANS: 4	REF: 088716siii