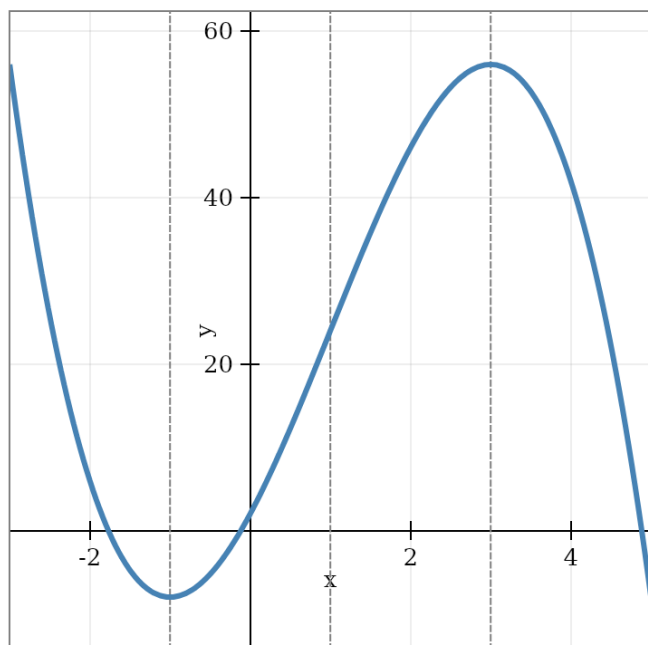




Functions and Function Notation

1 On which interval(s) is the slope negative?



A

$$(-\infty, -1)$$

B

$$(-\infty, -1) \cup (3, \infty)$$

C

$$(-1, 1) \cup (1, 3)$$

D

$$(-1, 1)$$

2 On which set of open intervals does this rational function keep a constant sign?

$$\frac{x^2 - 3x - 4}{x}$$

A

$$(-\infty, -1) \cup (-1, 0) \cup (0, 4) \cup (4, \infty)$$

B

$$(-\infty, -4) \cup (-4, -1) \cup (-1, 0) \cup (0, 4) \cup (4, \infty)$$

C

$$(-\infty, -3) \cup (-3, -1) \cup (-1, 0) \cup (0, 4) \cup (4, \infty)$$

D

$$(-\infty, -2) \cup (-2, -1) \cup (-1, 0) \cup (0, 4) \cup (4, \infty)$$

3 Which set of values satisfies this inequality?

$$\frac{(x+1)(x-1)}{x+2} > 0$$

A

$$(-\infty, -4) \cup (-2, -1) \cup (1, \infty)$$

B

$$(-2, -1) \cup (1, \infty)$$

C

$$(-\infty, -2) \cup (-2, -1) \cup (-1, 1) \cup (1, \infty)$$

D

$$(-\infty, -2) \cup (-1, 1)$$



Functions and Function Notation

- 4 On which set of open intervals does this rational function keep a constant sign?

$$\frac{(x+2)(x+1)}{x-2}$$

A $(-\infty, -2) \cup (-2, -1) \cup (-1, 2) \cup (2, \infty)$

B $(-\infty, -2) \cup (-2, -1) \cup (-1, 0) \cup (0, 2) \cup (2, \infty)$

C $(-\infty, -4) \cup (-4, -2) \cup (-2, -1) \cup (-1, 2) \cup (2, \infty)$

D $(-\infty, -3) \cup (-3, -2) \cup (-2, -1) \cup (-1, 2) \cup (2, \infty)$

- 5 On which set of open intervals does this rational function keep a constant sign?

$$\frac{x(x-3)(x-4)}{x}$$

A $(-\infty, -4) \cup (-4, 3) \cup (3, 4) \cup (4, \infty)$

B $(-\infty, 3) \cup (3, 4) \cup (4, \infty)$

C $(-\infty, -3) \cup (-3, 3) \cup (3, 4) \cup (4, \infty)$

D $(-\infty, 0) \cup (0, 3) \cup (3, 4) \cup (4, \infty)$

- 6 Which set of values satisfies this inequality?

$$(x-2)(x-3)(x-4) < 0$$

A $(-\infty, 2) \cup (2, 3) \cup (3, 4) \cup (4, \infty)$

B $(-\infty, 2) \cup (3, 4)$

C $(-4, 2) \cup (3, 4)$

D $(2, 3) \cup (4, \infty)$

- 7 Which set of values satisfies this inequality?

$$(x+4)^4(x+1)^3(x-3)^5 < 0$$

A $(-1, 3)$

B $(-\infty, -4) \cup (-1, 3)$

C $(-\infty, -1) \cup (-1, 3) \cup (3, \infty)$

D $(-\infty, -1) \cup (3, \infty)$



Functions and Function Notation

- 8 Which chart correctly shows the intervals where this inequality is valid?

$$\frac{x^2 + x - 6}{x + 2} < 0$$

A

Interval	Valid
$(-\infty, -3)$	Yes
$(-3, -2)$	No
$(-2, 2)$	Yes
$(2, \infty)$	No

B

Interval	Valid
$(-\infty, -3)$	No
$(-3, -2)$	Yes
$(-2, -1)$	No
$(-1, 2)$	Yes
$(2, \infty)$	No

C

Interval	Valid
$(-\infty, -4)$	No
$(-4, -3)$	Yes
$(-3, -2)$	No
$(-2, 2)$	Yes
$(2, \infty)$	No

D

Interval	Valid
$(-\infty, -3)$	No
$(-3, -2)$	Yes
$(-2, 2)$	No
$(2, \infty)$	Yes

- 9 Which chart correctly shows the intervals where this inequality is valid?

$$\frac{(x - 1)^3(x - 4)^2}{x + 1} < 0$$

A

Interval	Valid
$(-\infty, -1)$	Yes
$(-1, 1)$	No
$(1, \infty)$	Yes

B

Interval	Valid
$(-\infty, -1)$	Yes
$(-1, 1)$	No
$(1, 4)$	Yes
$(4, \infty)$	No

C

Interval	Valid
$(-\infty, -4)$	Yes
$(-4, -1)$	No
$(-1, 1)$	Yes
$(1, \infty)$	No

D

Interval	Valid
$(-\infty, -1)$	No
$(-1, 1)$	Yes
$(1, \infty)$	No



Functions and Function Notation

10 On which set of open intervals does this polynomial keep a constant sign?

$$x^2 - 6x + 8$$

- | | |
|---|---|
| A | $(-\infty, -3) \cup (-3, 2) \cup (2, 4) \cup (4, \infty)$ |
| B | $(-\infty, -2) \cup (-2, 2) \cup (2, 4) \cup (4, \infty)$ |
| C | $(-\infty, 2) \cup (2, 4) \cup (4, \infty)$ |
| D | $(-\infty, -4) \cup (-4, 2) \cup (2, 4) \cup (4, \infty)$ |

11 On which set of open intervals does this polynomial keep a constant sign?

$$(x + 2)^5 x^5 (x - 2)^2$$

- | | |
|---|---|
| A | $(-\infty, -3) \cup (-3, -2) \cup (-2, 0) \cup (0, \infty)$ |
| B | $(-\infty, -2) \cup (-2, 0) \cup (0, 2) \cup (2, \infty)$ |
| C | $(-\infty, -2) \cup (-2, 0) \cup (0, \infty)$ |
| D | $(-\infty, -4) \cup (-4, -2) \cup (-2, 0) \cup (0, \infty)$ |

12 What set describes the domain of this function?

$$f(x) = \frac{-1x + 5}{-3x^2 + 8x - 17}$$

- | | |
|--------|-------------------------|
| A | B |
| $\{\}$ | $\{X \in \mathbb{R} \}$ |

13 What set describes the domain of this function?

$$f(x) = \frac{-1x - 4}{\sqrt{-1x + 3}}$$

- | | |
|---|--------------------------------|
| A | $\{X \in \mathbb{R} X < 3\}$ |
| B | $\{X \in \mathbb{R} 3 < X\}$ |

14 What set describes the domain of this function?

$$f(x) = \frac{1x - 4}{\sqrt{-3x^2 - 1x - 14}}$$

- | | |
|-------------------------|--------|
| A | B |
| $\{X \in \mathbb{R} \}$ | $\{\}$ |

15 What set describes the domain of this function?

$$f(x) = \sqrt{-1x^2 + 3x + 4}$$

- | | |
|---|---|
| A | $\{X \in \mathbb{R} \}$ |
| B | $\{X \in \mathbb{R} -1 \leq X \leq 4\}$ |



Functions and Function Notation

- 16** What set describes the domain of this function?

$$f(x) = \sqrt{-3x^2 + 4x - 14}$$

A

$$\{\}$$

B

$$\{X \in \mathbb{R} | \}$$

- 17** What set describes the domain of this function?

$$f(x) = \frac{1x + 4}{\sqrt{3x^2 - 6x - 9}}$$

A

$$\{X \in \mathbb{R} | -1 < X < 1 \text{ or } -3 < X < 3\}$$

B

$$\{X \in \mathbb{R} | X < -1 \text{ or } 3 < X\}$$

- 18** What set describes the domain of this function?

$$f(x) = \frac{2}{-2x^2 - 2x + 12}$$

A

$$\{X \in \mathbb{R} | X \leq -3 \text{ or } -3 \leq X \leq 2 \text{ or } -2 < X < 2\}$$

B

$$\{X \in \mathbb{R} | X < -3 \text{ or } -3 < X < 2 \text{ or } 2 < X\}$$

- 19** What set describes the domain of this function?

$$f(x) = \frac{\sqrt{1x+4}}{-1x^2+7x-18}$$

A

$$\{X \in \mathbb{R} | -4 \leq X\}$$

B

$$\{X \in \mathbb{R} | X \leq -4\}$$

- 20** What set describes the domain of this function?

$$f(x) = \frac{\sqrt{-1x+1}}{-1x^2+8x-0}$$

A

$$\{X \in \mathbb{R} | -1 < X < 1 \text{ or } 0 < X < 1\}$$

B

$$\{X \in \mathbb{R} | X < 0 \text{ or } 0 < X \leq 1\}$$

- 21** Find the x intercept of this function by setting y to zero and solving

$$-24x - 6y = 48$$

A

7

B

5

C

-8

D

3

E

-4

F

-2

- 22** Find the x intercept of this function by setting y to zero and solving

$$8x - 2y = 4.2$$

A

2

B

-0.2

C

-2.5

D

-1

E

-1.8

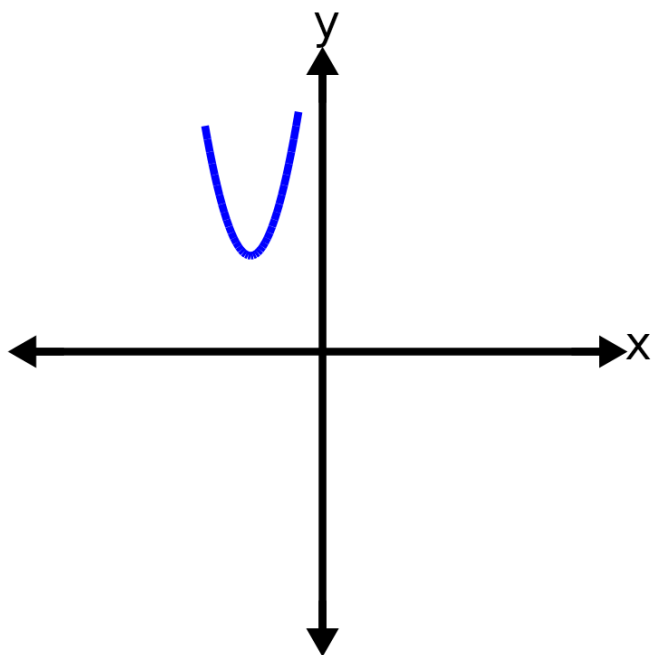
F

0.5



Functions and Function Notation

23 What would the range of this function be?



A

$$(-\infty, 4]$$

B

$$[4, \infty)$$

C

$$(-\infty, -4]$$

D

$$[-4, \infty)$$

24 What roots (solutions) would this quadratic equation have?

$$y = x^2 - 4x + 3$$

A

$$x = 4$$
$$x = 4$$

B

$$x = 5$$
$$x = -5$$

C

$$x = 2$$
$$x = 5$$

D

$$x = 3$$
$$x = 1$$

25 What roots (solutions) would this quadratic equation have?

$$y = 5x^2 + 3x - 5$$

A

$$x = 0.74$$
$$x = -1.34$$

B

$$x = 4.37$$
$$x = 0.18$$

C

$$x = 0.58$$
$$x = 1.41$$

D

$$x = 1.68$$
$$x = -4.22$$



Functions and Function Notation

26 Find the x intercept of this function

$$y = -4x - 8$$

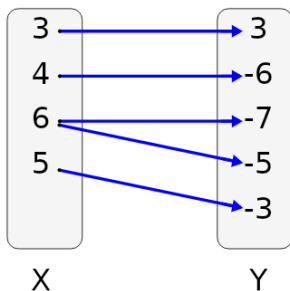
A -9	B 5	C -4
D -7	E -2	F -1

27 Find the x intercept of this function

$$y = 3x + 3.6$$

A 0.3	B -2.7	C 1.1
D -2	E -0.4	F -1.2

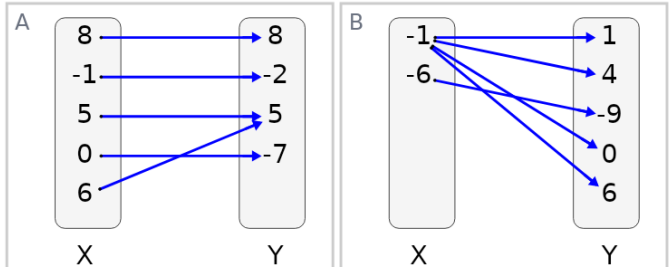
28 When is a relation like this a 'Function'?



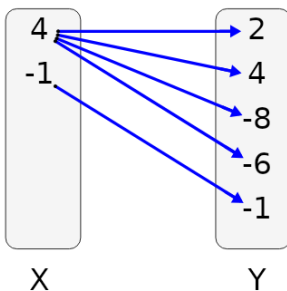
A Every x value has a single y value

B Every y value has a single x value

29 Which relation IS a function?



30 Is this relation a function?



A Yes

B No

31 Evaluate $g(4)$.

$$g(x) = -x + 7$$

A -3	B 6
C -11	D 3

32 Evaluate $g(-1)$.

$$g(x) = -2x^2 - 5x + 2$$

A -3	B -5
C 5	D 7

33 What is the value of the final population given this scenario?

A bacteria population starts at 400. It grows continuously at 3% growth per year. After 2 years it has increased to a certain population.

A $P = 445$
B $P = 335$
C $P = 424$



Functions and Function Notation

34 Which table of values matches the function?

$$f(x) = -x - 6$$

A

x	f(x)
-2	-4
1	-7
2	-8
4	-10

B

x	f(x)
-2	-8
1	-5
2	-4
4	-2

35 Which table of values matches the function?

$$g(x) = x^2 - 4x + 3$$

A

x	g(x)
-2	20
0	4
1	2
2	4

B

x	g(x)
-2	15
0	3
1	0
2	-1



Functions and Function Notation

36 What range does this number line show?



A All real numbers greater than -9 and less than 7 OR greater than or equal to 8

B All real numbers greater than or equal to -9 and less than or equal to 7 OR greater than 8

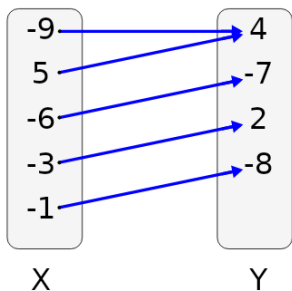
37 What interval describes the range on this number line?



A $(-\infty, 7) \cup [8, 10)$

B $(-\infty, 7] \cup [8, 10)$

38 What is the range for this function?



A $R: \{4, -7, 2, -8\}$

B $R: \{-9, 5, -6, -3, -1\}$

39 What set describes the domain of this function?

$$f(x) = \frac{1x + 3}{-1x - 3}$$

A $\{X \in \mathbb{R} \mid -3 < X < 3 \text{ or } -3 < X < 3\}$

B $\{X \in \mathbb{R} \mid X < -3 \text{ or } -3 < X\}$

40 Which relation has this range?

$$R: \{6, -6, -8, 8, -1\}$$

