

Name \_\_\_\_\_

**Decide whether the relation is a function.**

1)  $\{(-2, 2), (1, -7), (5, -2), (8, -7), (11, -9)\}$

1) \_\_\_\_\_

2)  $\{(-4, 1), (-3, -4), (1, 7), (1, 1)\}$

2) \_\_\_\_\_

3)  $\{(-5, 3), (-3, 5), (4, 2), (8, 3)\}$

3) \_\_\_\_\_

**Solve the problem.**

4) Some values for a relation are given in the table. Is the relation a function?

4) \_\_\_\_\_

x	y
1	5
2	9
3	2
3	4
4	7

5) Some values for a relation are given in the table. Is the relation a function?

5) \_\_\_\_\_

x	y
5	3
6	4
7	6
8	6
9	15

Determine the domain and range of the relation. State whether the relation is a function or not a function.

6) 

input	-4	-3	3	4
output	2	10	2	10

6) \_\_\_\_\_

7) 

input	1	7	1	3
output	8	4	13	12

7) \_\_\_\_\_

8) 

input	4	9	4	1
output	7	2	4	5

8) \_\_\_\_\_

9) 

input	-4	-1	1	4
output	8	14	8	14

9) \_\_\_\_\_

10) 

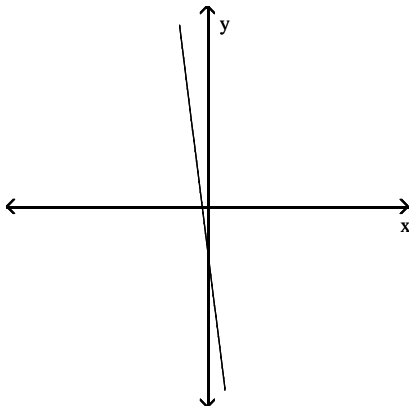
input	-8	-1	1	8
output	1	8	1	8

10) \_\_\_\_\_

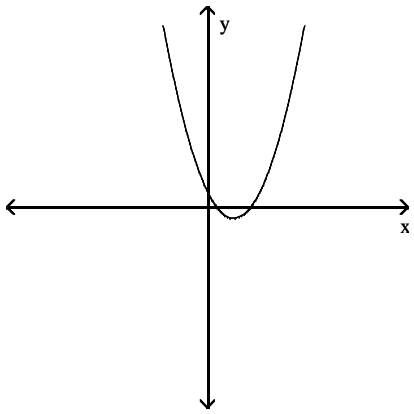
Use the vertical line test on the graph to determine if  $y$  is a function of  $x$ .

11)

11) \_\_\_\_\_

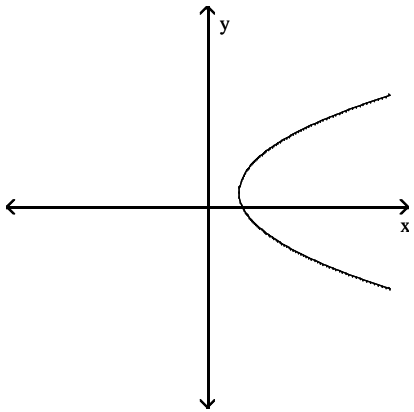


12)



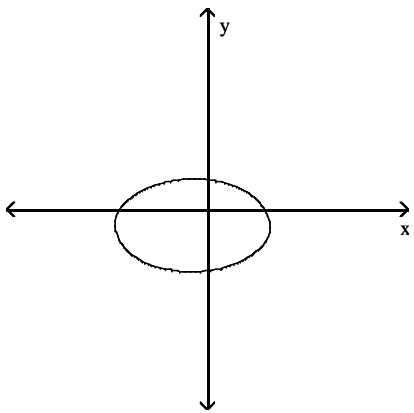
12) \_\_\_\_\_

13)



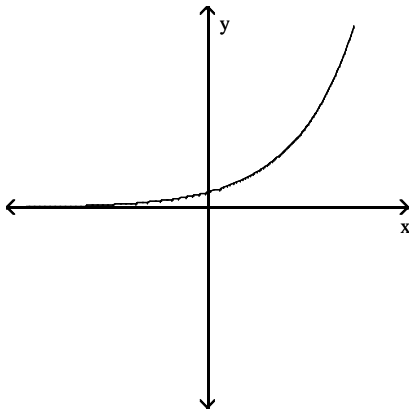
13) \_\_\_\_\_

14)



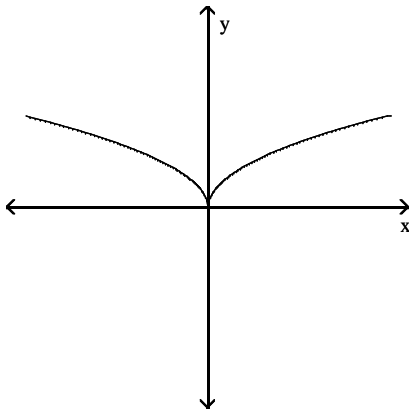
14) \_\_\_\_\_

15)



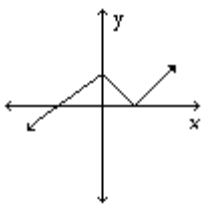
15) \_\_\_\_\_

16)



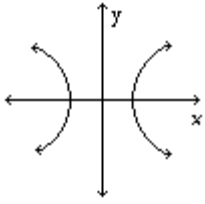
16) \_\_\_\_\_

17)



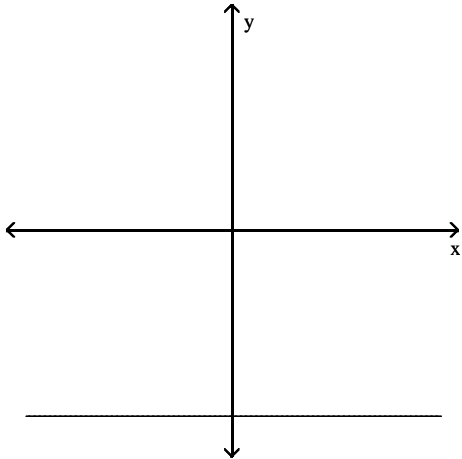
17) \_\_\_\_\_

18)



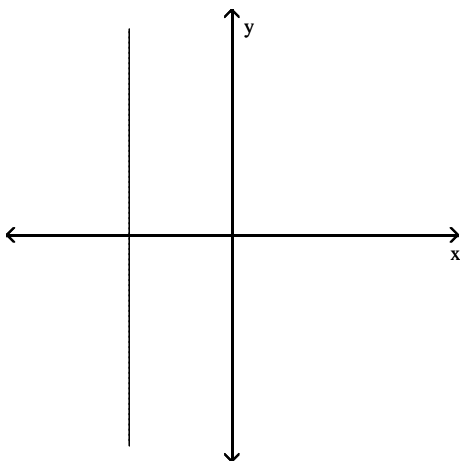
18) \_\_\_\_\_

19)



19) \_\_\_\_\_

20)



20) \_\_\_\_\_

Find the domain of the function.

$$21) \frac{x}{\sqrt{x-7}}$$

21) \_\_\_\_\_

$$22) \frac{x}{\sqrt{x-1}}$$

22) \_\_\_\_\_

$$23) f(x) = \frac{1}{x-2}$$

23) \_\_\_\_\_

$$24) f(x) = \frac{1}{x+3}$$

24) \_\_\_\_\_

$$25) f(x) = \frac{-5x}{x-6}$$

25) \_\_\_\_\_

$$26) f(x) = \frac{9x}{x+5}$$

26) \_\_\_\_\_

$$27) f(x) = x - \frac{4}{x+2}$$

27) \_\_\_\_\_

$$28) f(x) = x - \frac{4}{x-2}$$

28) \_\_\_\_\_

$$29) f(x) = \frac{1}{x-9} + \frac{4}{x-5}$$

29) \_\_\_\_\_

$$30) f(x) = \frac{1}{x-6} + \frac{4}{x+6}$$

30) \_\_\_\_\_

$$31) f(x) = \frac{1}{x-4} + \frac{4}{x+5}$$

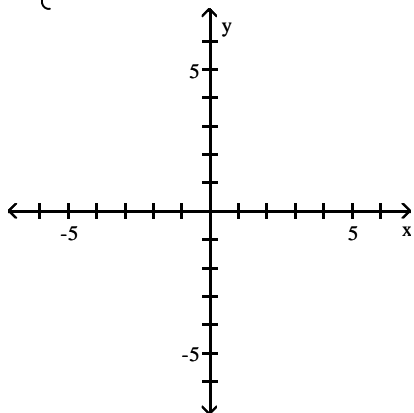
31) \_\_\_\_\_

**Graph the function.**

32)

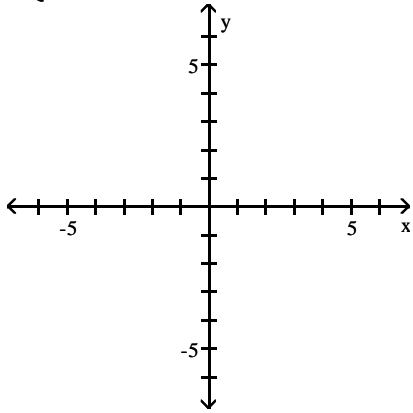
$$f(x) = \begin{cases} x + 1 & \text{if } x < 1 \\ -3 & \text{if } x \geq 1 \end{cases}$$

32) \_\_\_\_\_



33)

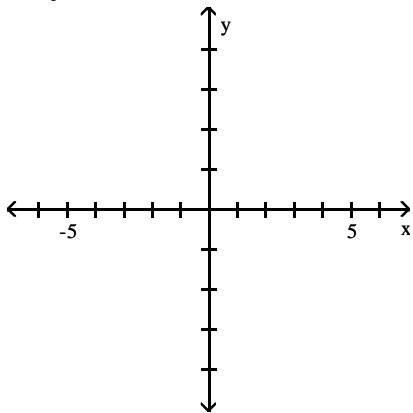
$$f(x) = \begin{cases} -x + 3 & \text{if } x < 2 \\ 2x - 3 & \text{if } x \geq 2 \end{cases}$$



33) \_\_\_\_\_

34)

$$f(x) = \begin{cases} -x + 2 & x < 0 \\ \sqrt{x} + 3 & x \geq 0 \end{cases}$$

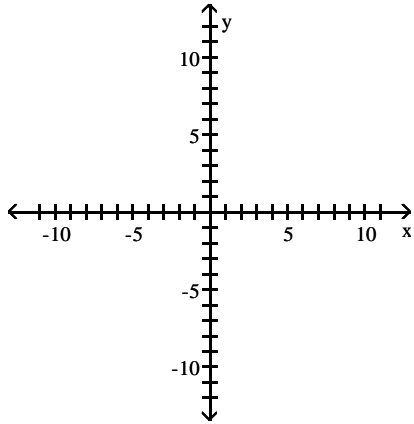


34) \_\_\_\_\_



35)

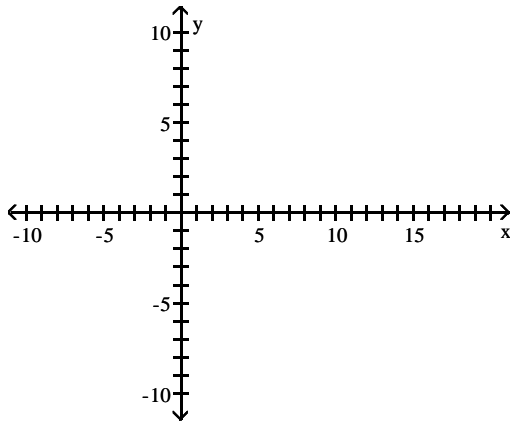
$$f(x) = \begin{cases} x + 3 & \text{if } -9 \leq x < 2 \\ -9 & \text{if } x = 2 \\ -x + 4 & \text{if } x > 2 \end{cases}$$



35) \_\_\_\_\_

36)

$$f(x) = \begin{cases} 1 & \text{if } -2 \leq x < 5 \\ |x| & \text{if } 5 \leq x < 8 \\ \sqrt{x} & \text{if } 8 \leq x \leq 11 \end{cases}$$



36) \_\_\_\_\_

**Find the domain of the function.**

37)

$$f(x) = \begin{cases} 4x & \text{if } x \neq 0 \\ 2 & \text{if } x = 0 \end{cases}$$

37) \_\_\_\_\_

38)

$$f(x) = \begin{cases} 3x & \text{if } x \neq 0 \\ 3 & \text{if } x = 0 \end{cases}$$

38) \_\_\_\_\_

39)

$$f(x) = \begin{cases} 1 & \text{if } -9 \leq x < -6 \\ |x| & \text{if } -6 \leq x < 9 \\ \sqrt[3]{x} & \text{if } 9 \leq x \leq 21 \end{cases}$$

39) \_\_\_\_\_

40)

$$f(x) = \begin{cases} 1 & \text{if } -5 \leq x < -3 \\ |x| & \text{if } -3 \leq x < 5 \\ \sqrt[3]{x} & \text{if } 5 \leq x \leq 33 \end{cases}$$

40) \_\_\_\_\_

**Locate any intercepts of the function.**

41)

$$f(x) = \begin{cases} -3x + 6 & \text{if } x < 1 \\ 6x - 3 & \text{if } x \geq 1 \end{cases}$$

41) \_\_\_\_\_

42)

$$f(x) = \begin{cases} -4x + 8 & \text{if } x < 1 \\ 8x - 4 & \text{if } x \geq 1 \end{cases}$$

42) \_\_\_\_\_

43)

$$f(x) = \begin{cases} 1 & \text{if } -2 \leq x < -3 \\ |x| & \text{if } -3 \leq x < 2 \\ \sqrt{x} & \text{if } 2 \leq x \leq 24 \end{cases}$$

43) \_\_\_\_\_

44)

$$f(x) = \begin{cases} 1 & \text{if } -5 \leq x < -4 \\ |x| & \text{if } -4 \leq x < 5 \\ \sqrt[3]{x} & \text{if } 5 \leq x \leq 26 \end{cases}$$

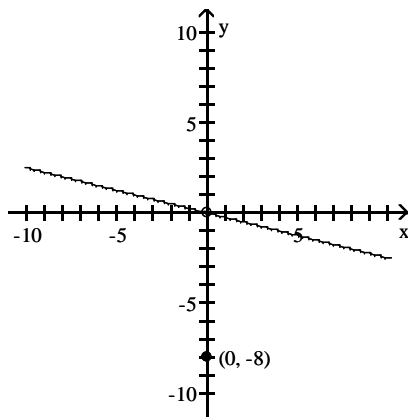
44) \_\_\_\_\_

Based on the graph, find the range of  $y = f(x)$ .

45)

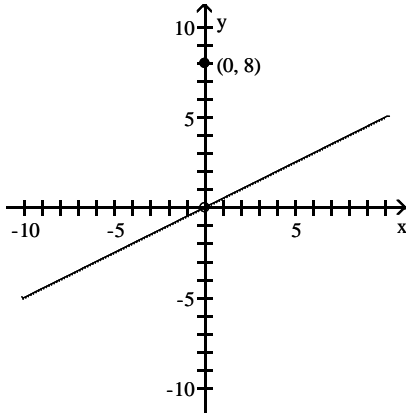
$$f(x) = \begin{cases} -\frac{1}{4}x & \text{if } x \neq 0 \\ -8 & \text{if } x = 0 \end{cases}$$

45) \_\_\_\_\_



46)

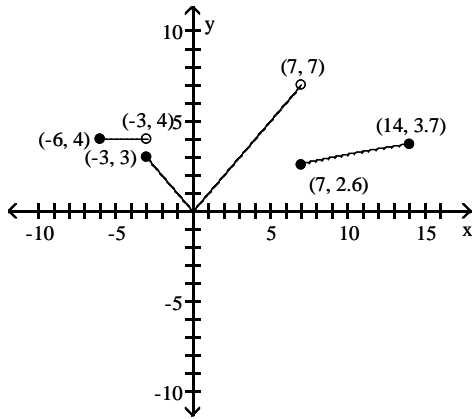
$$f(x) = \begin{cases} \frac{1}{2}x & \text{if } x \neq 0 \\ 8 & \text{if } x = 0 \end{cases}$$



46) \_\_\_\_\_

47)

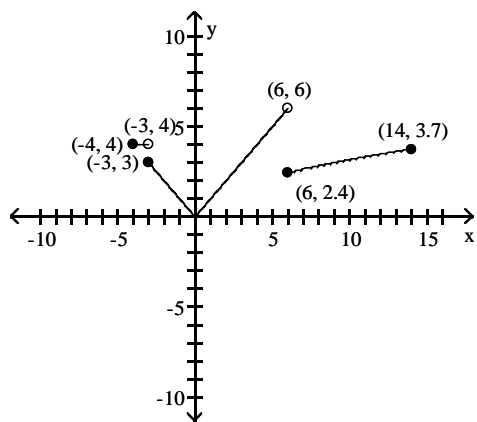
$$f(x) = \begin{cases} 4 & \text{if } -6 \leq x < -3 \\ |x| & \text{if } -3 \leq x < 7 \\ \sqrt{x} & \text{if } 7 \leq x \leq 14 \end{cases}$$



47) \_\_\_\_\_

48)

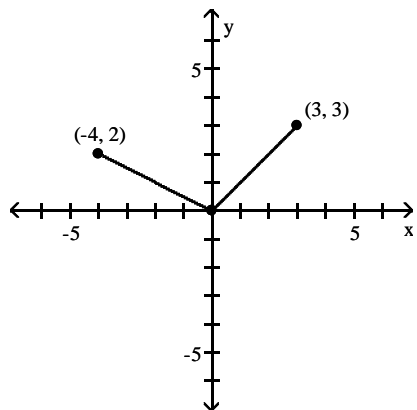
$$f(x) = \begin{cases} 4 & \text{if } -4 \leq x < -3 \\ |x| & \text{if } -3 \leq x < 6 \\ \sqrt{x} & \text{if } 6 \leq x \leq 14 \end{cases}$$



48) \_\_\_\_\_

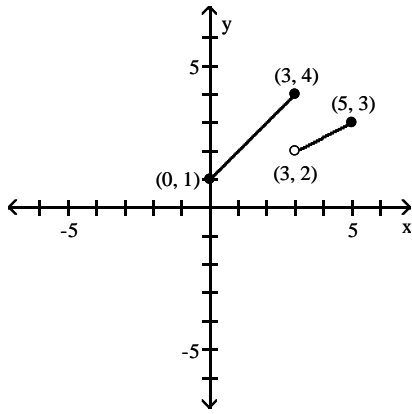
The graph of a piecewise-defined function is given. Write a definition for the function.

49)



49) \_\_\_\_\_

50)

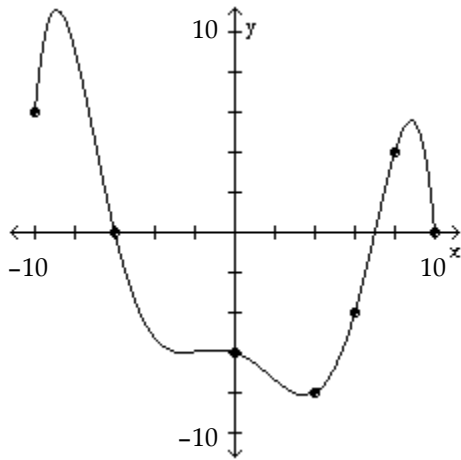


50) \_\_\_\_\_

The graph of a function  $f$  is given. Use the graph to answer the question.

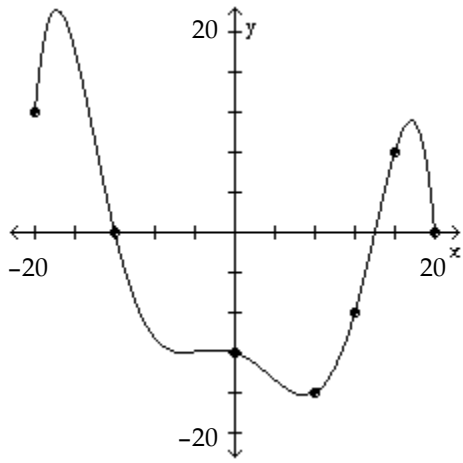
51) What is the domain of  $f$ ?

51) \_\_\_\_\_



52) What is the domain of  $f$ ?

52) \_\_\_\_\_



## Answer Key

Testname: Q3PREP2.3TO2.4V01

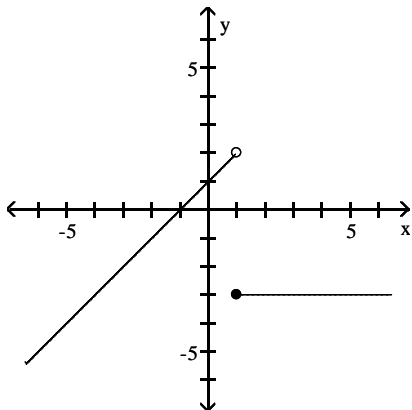
- 1) Function
- 2) Not a function
- 3) Function
- 4) No
- 5) Yes
- 6) domain:  $\{-4, -3, 3, 4\}$   
range:  $\{2, 10\}$   
function
- 7) domain:  $\{1, 3, 7\}$   
range:  $\{13, 12, 4, 8\}$   
not a function
- 8) domain:  $\{4, 1, 9\}$   
range:  $\{4, 5, 2, 7\}$   
not a function
- 9) domain:  $\{-4, -1, 1, 4\}$   
range:  $\{8, 14\}$   
function
- 10) domain:  $\{-8, -1, 1, 8\}$   
range:  $\{1, 8\}$   
function
- 11) Function
- 12) Function
- 13) Not a function
- 14) Not a function
- 15) Function
- 16) Function
- 17) Function
- 18) Not a function
- 19) Function
- 20) Not a function
- 21)  $(7, \infty)$
- 22)  $(1, \infty)$
- 23)  $(-\infty, 2) \cup (2, \infty)$
- 24)  $(-\infty, -3) \cup (-3, \infty)$
- 25)  $(-\infty, 6) \cup (6, \infty)$
- 26)  $(-\infty, -5) \cup (-5, \infty)$
- 27)  $(-\infty, -2) \cup (-2, \infty)$
- 28)  $(-\infty, 2) \cup (2, \infty)$
- 29)  $(-\infty, 5) \cup (5, 9) \cup (9, \infty)$
- 30)  $(-\infty, -6) \cup (-6, 6) \cup (6, \infty)$
- 31)  $(-\infty, -5) \cup (-5, 4) \cup (4, \infty)$



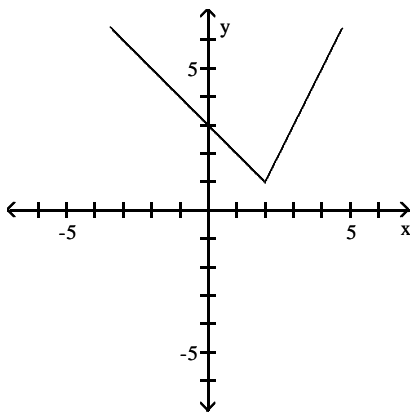
Answer Key

Testname: Q3PREP2.3TO2.4V01

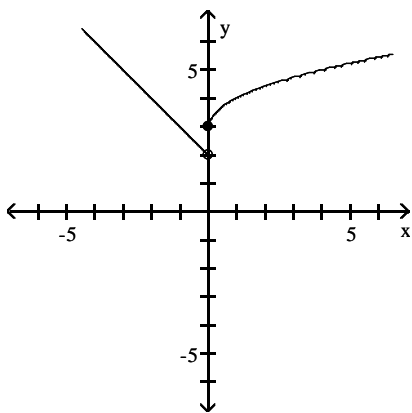
32)



33)



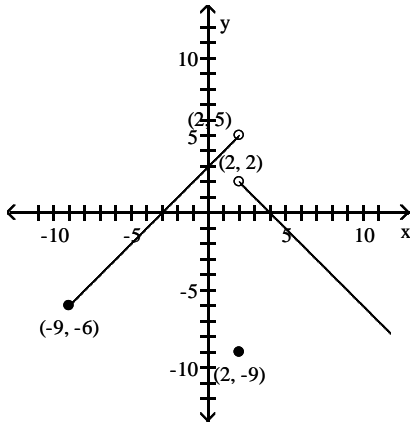
34)



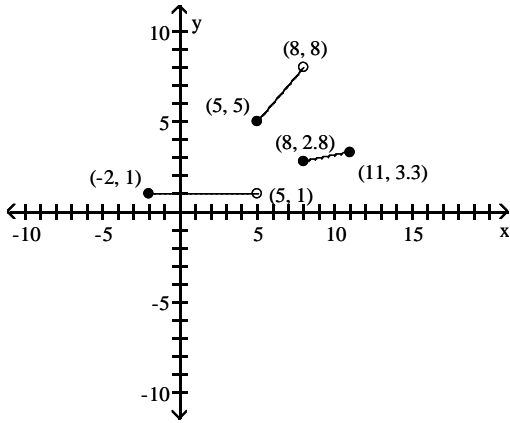
Answer Key

Testname: Q3PREP2.3TO2.4V01

35)



36)



37) all real numbers

38) all real numbers

39)  $\{x \mid -9 \leq x \leq 21\}$

40)  $\{x \mid -5 \leq x \leq 33\}$

41) (0, 6)

42) (0, 8)

43) (0, 0)

44) (0, 0)

45)  $(-\infty, 0)$  or  $(0, \infty)$

46)  $(-\infty, 0)$  or  $(0, \infty)$

47)  $[0, 7)$

48)  $[0, 6)$

49)

$$f(x) = \begin{cases} -\frac{1}{2}x & \text{if } -4 \leq x \leq 0 \\ x & \text{if } 0 < x \leq 3 \end{cases}$$

50)

$$f(x) = \begin{cases} x + 1 & \text{if } 0 \leq x \leq 3 \\ \frac{1}{2}x + \frac{1}{2} & \text{if } 3 < x \leq 5 \end{cases}$$

51)  $\{x \mid -10 \leq x \leq 10\}$

52)  $\{x \mid -20 \leq x \leq 20\}$