

1. Solve for  $x$ :

$$-9x - 3 = -6x - 6$$

2. Solve for  $x$ :

$$-13x + 10 = -8x - 20$$

3. Solve for  $x$ :

$$-7x + 3(8x + 9) = -6 - (-x - 1)$$

4. Solve for  $x$ :

$$x - (x - 4) = -6 - 2x$$

5. Solve for all values of  $y$  in simplest form.

$$|14 + 2y| = 4$$

6. Solve for all values of  $c$  in simplest form.

$$10 = |-4c + 6|$$

7. Solve for  $x$ .

$$\frac{x + 2}{x - 1} = \frac{7}{4}$$

8. Solve for  $x$ .

$$\frac{4x + 4}{4} = \frac{x - 5}{3}$$

9. Solve the following inequality for  $g$ . Write your answer in simplest form.

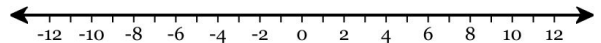
$$4 + 4(9g + 5) > -7g - 4 - 5g$$

10. Solve the following inequality for  $k$ . Write your answer in simplest form.

$$6 + 3(9k - 6) \geq 7k + 2 + 6$$

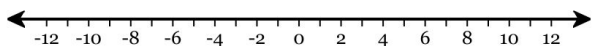
11. Solve for  $x$  and graph the solution on the number line below. If possible, resolve your answer to a single inequality. In case of no solution ( $\emptyset$ ), leave the number line blank.

$$25 \geq 4x - 7 \quad \text{and} \quad 4x - 7 \leq 33$$



12. Solve for  $x$  and graph the solution on the number line below. If possible, resolve your answer to a single inequality. In case of no solution ( $\emptyset$ ), leave the number line blank.

$$-4x - 8 \geq 32 \quad \text{or} \quad -4x - 8 \geq -52$$



13. Solve the following inequality *algebraically*.

$$|x - 5| < 6$$

14. Solve the following inequality *algebraically*.

$$|x + 7| \geq 6$$

15. Put the following equation of a line into slope-intercept form, simplifying all fractions.

$$x - 6y = -42$$

16. Put the following equation of a line into slope-intercept form, simplifying all fractions.

$$2x + y = 4$$

17. What is the equation of the line that passes through the point  $(7, -3)$  and has a slope of  $-1$ ?

18. What is the equation of the line that passes through the point  $(-5, 3)$  and has a slope of  $0$ ?

19. What is an equation of the line that passes through the points  $(5, 1)$  and  $(-5, -3)$ ?

20. What is an equation of the line that passes through the points  $(-2, -6)$  and  $(-2, -2)$ ?

21. Solve the system of equations using elimination:  
 $-8x - 3y = -38$  and  $-x - 2y = 5$ .

22. Solve the system of equations using elimination:  
 $3x - 2y = -6$  and  $8x - 3y = -30$ .

23. Solve the system by substitution.

$$\begin{aligned} -x + 8y &= 20 \\ x &= y + 8 \end{aligned}$$

24. Solve the system by substitution.

$$\begin{aligned} y + 4 &= x \\ 10x + 2y &= 16 \end{aligned}$$

25. Ajay is working two summer jobs, making \$8 per hour babysitting and making \$11 per hour tutoring. In a given week, he can work a maximum of 14 total hours and must earn a minimum of \$130. If Ajay worked 4 hours babysitting, determine the minimum number of whole hours tutoring that he must work to meet his requirements.

26. Jaya owns a food truck that sells tacos and burritos. She only has enough supplies to make 66 tacos or burritos. She sells each taco for \$5 and each burrito for \$10. Jaya must sell a minimum of \$510 worth of tacos and burritos each day. If 39 burritos were sold, determine all possible values for the number of tacos that Jaya must sell in order to meet the requirements.

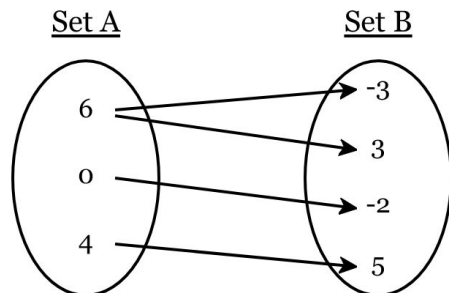
27. Solve the following equation for  $b$ .

$$6b + rb = D^3$$

28. Solve the following equation for  $B$ .

$$F(-G + B) = n$$

29. Fill in the blanks below in order to justify whether or not the mapping shown represents a function.



The mapping diagram above \_\_\_\_\_ a  
word bank 1  
 function since \_\_\_\_\_ in \_\_\_\_\_  
word bank 2 word bank 3  
 has \_\_\_\_\_.  
word bank 4 word bank 5

**This word bank also applies to question 30.**

Word bank 1: (a) represents, (b) does NOT represent

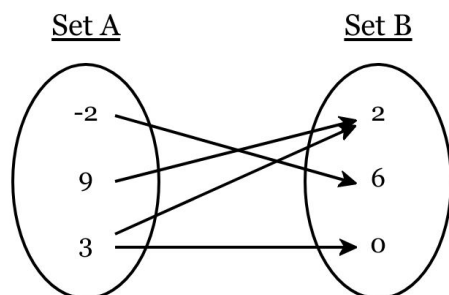
Word bank 2: (a) one number, (b) each number

Word bank 3: (a) Set B (the input), (b) Set A (the output), (c) Set A (the input), (d) Set B (the output)

Word bank 4: (a) no mapping, (b) only one mapping, (c) multiple mappings

Word bank 5: (a) to Set B (the output), (b) from Set A (the input), (c) to Set B (the input), (d) from Set A (the output)

30. Fill in the blanks below in order to justify whether or not the mapping shown represents a function.



The mapping diagram above \_\_\_\_\_ a  
word bank 1  
 function since \_\_\_\_\_ in \_\_\_\_\_  
word bank 2 word bank 3  
 has \_\_\_\_\_.  
word bank 4 word bank 5

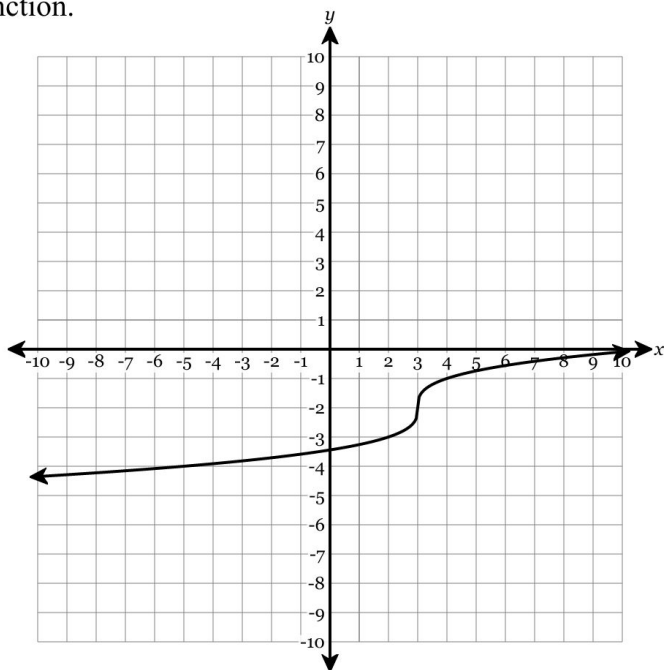
31. Which set of ordered pairs represents a function?

- A.  $\{(2, 3), (7, 7), (-1, 7), (5, -8)\}$
- B.  $\{(3, -2), (-8, 1), (-8, 9), (1, -5)\}$
- C.  $\{(-6, -3), (5, 5), (-6, 8), (-5, -1)\}$
- D.  $\{(5, -8), (5, -3), (7, -7), (6, 0)\}$

32. Which set of ordered pairs does *not* represent a function?

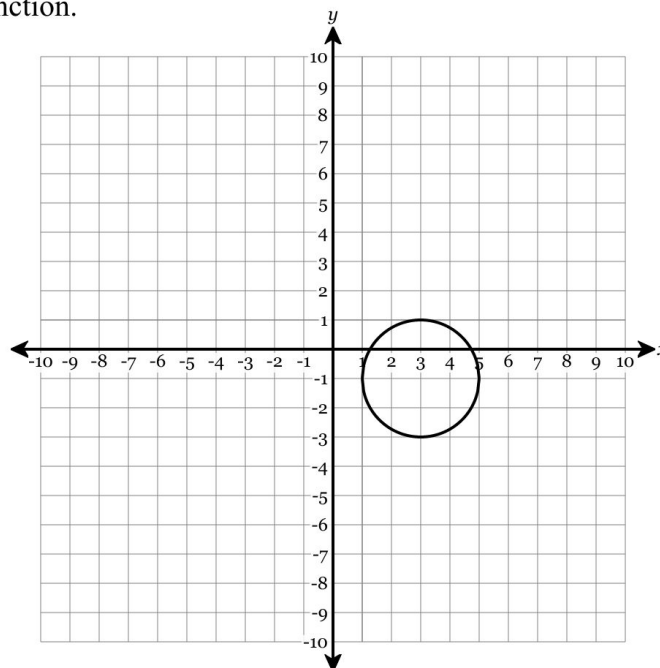
- A.  $\{(-7, 1), (0, -7), (-1, -6), (-9, -6)\}$
- B.  $\{(-8, 4), (4, -8), (7, -6), (-9, -8)\}$
- C.  $\{(6, -4), (6, -8), (7, 5), (8, -1)\}$
- D.  $\{(-7, 4), (1, 8), (-4, -2), (3, -4)\}$

33. Determine whether the following graph represents a function.



- A. Not a Function
- B. Function

34. Determine whether the following graph represents a function.



- A. Function
- B. Not a Function

35. Given  $f(x) = 2x^2 - 10x + 4$ , find  $f(3)$

36. Given  $f(x) = 4x^2 - 4$ , find  $f(7)$

37. Fully simplify.  $9xy^3(3x^2y^2)$

38. Fully simplify.  $12x^5y^4(-13x^4y^4)$

39. Fully simplify using only positive exponents.

$$\frac{2x^7y^5}{8x^5y^2}$$

40. Fully simplify using only positive exponents.

$$\frac{4x^3y^5}{2x^7y^3}$$

41. Write the following expression without negative exponents and without parentheses.

$$-5x^{-3}$$

42. Write the following expression without negative exponents and without parentheses.

$$(4x)^{-1}$$

43. Express the following fraction in simplest form, only using positive exponents.

$$\frac{5a^4}{-2(a^4m^{-4})^{-1}}$$

44. Express the following fraction in simplest form, only using positive exponents.

$$\frac{(5m^4k^{-1})^{-4}}{2m^{-3}k^{-9}}$$

45. Rewrite the following polynomial in standard form.

$$10 + \frac{x^5}{5} + x^3$$

46. Rewrite the following polynomial in standard form.

$$1 - 2x - 5x^4 + 8x^3$$

47. Find the sum of  $2x^2 + 1$  and  $-9x^2 + 10x + 4$ .

48. Perform the operation.

$$(10x^2 - 8x - 5) - (-6x^2 - 3x + 2)$$

49. Express as a trinomial:  $(3x + 7)(x - 8)$

50. Express as a trinomial:  $(2x + 6)(2x + 1)$

51. Expand the expression to a polynomial in standard form:

$$(2x - 5)(-x^2 + 3x - 2)$$

52. Expand the expression to a polynomial in standard form:

$$(x - 3)(2x^2 - x + 8)$$

53. Find the quotient of  $-32x^4y^4 + 24x^3y^3$  divided by  $-4xy$ .

54. Find the quotient of  $-40t^3 - 40t^2$  divided by  $-5t^2$ .

55. Factor the expression completely:  $36x^4 - 28x^2$

56. Factor the expression completely:  $7x^2 + 5x^4$

57. Factor completely:  $36 - 49x^2$

58. Factor completely:  $25x^2 - 4$

59. Factor  $x^2 - 3x - 40$

60. Factor  $x^2 - 10x + 24$

61. Factor completely:  $3x^2 - 28x + 49$

62. Factor completely:  $6x^2 + 13x + 6$

63. Factor completely:  $2x^4 - 34x^3 + 140x^2$

64. Factor completely:  $125x^7 - 45x$

65. Factor the expression completely.

$$-5 - x^4 + 6x^2$$

66. Factor the expression completely.

$$14x^2 - x^4 - 45$$

67. Use factor by grouping to factor the following expression completely.

$$4x^3 + 16x^2 - 9x - 36$$

68. Use factor by grouping to factor the following expression completely.

$$x^3 + 6x^2 - 14x - 84$$