Student: _____	**Instructor:** Alfredo Alvarez	**Assignment:** math 131437 math warm up Help91
Date: _____	**Course:** Math 1314 Alvarez	

1. Perform the indicated operation.

$$\left(-7x^3+10x^2-4x+4\right)+\left(4x^3+7x^2-4x-6\right)$$

Write the polynomial in standard form.

$$\left(-7x^3+10x^2-4x+4\right)+\left(4x^3+7x^2-4x-6\right)=$$ ☐

What is the degree of the polynomial?

☐

(Type a whole number.)

Answers $-3x^3+17x^2-8x-2$

3

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2. Perform the indicated operation.

$$\left(10x^3-9x^2+10x-4\right)-\left(7x^3-9x^2-10x+10\right)$$

Write the polynomial in standard form.

$$\left(10x^3-9x^2+10x-4\right)-\left(7x^3-9x^2-10x+10\right)=$$ ☐

What is the degree of the polynomial?

☐

(Type a whole number.)

Answers $3x^3+20x-14$

3

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3. Find the product.

$$(x+10)(x^2-10x+100)$$

$(x+10)(x^2-10x+100)=$ ☐ (Simplify your answer.)

Answer: x^3+1000

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4. Find the product.

$$(8x+9)\left(x^2+5x+4\right)$$

$(8x+9)\left(x^2+5x+4\right)=$ ☐
(Simplify your answer.)

Answer: $8x^3+49x^2+77x+36$

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5. Multiply.

$(x + 2)(x + 1)$

$(x + 2)(x + 1) =$ ☐ (Simplify your answer.)

Answer: $x^2 + 3x + 2$

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6. Find the product.

$(x - 14)(x + 5)$

$(x - 14)(x + 5) =$ ☐

Answer: $x^2 - 9x - 70$

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7. Use the FOIL method to multiply the binomials.

$(4x + 1)(3x + 5)$

$(4x + 1)(3x + 5) =$ ☐ (Simplify your answer.)

Answer: $12x^2 + 23x + 5$

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8. Find the product.

$(4x - 5)(2x + 7)$

$(4x - 5)(2x + 7) =$ ☐

Answer: $8x^2 + 18x - 35$

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9. Find the product

$\left(2x^2 - 3\right)\left(7x^2 - 6\right)$

$\left(2x^2 - 3\right)\left(7x^2 - 6\right) =$ ☐ (Simplify your answer.)

Answer: $14x^4 - 33x^2 + 18$

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10. Find the product.

$(x - 7)(x + 7)$

$(x - 7)(x + 7) =$ ☐ (Simplify your answer.)

Answer: $x^2 - 49$

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11. Multiply using the rule for the product of the sum and difference of two terms.

$(4x + 3)(4x - 3)$

$(4x + 3)(4x - 3) =$ ☐

Answer: $16x^2 - 9$

---

12. Multiply using the rule for the square of a binomial.

$(x + 10)^2$

$(x + 10)^2 =$ ☐

Answer: $x^2 + 20x + 100$

---

13. Find the product.

$(3x + 5)^2$

$(3x + 5)^2 =$ ☐ (Simplify your answer.)

Answer: $9x^2 + 30x + 25$

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14. Multiply using the rule for the square of a binomial.

$(x - 2)^2$

$(x - 2)^2 =$ ☐

Answer: $x^2 - 4x + 4$

---

15. Find the product.

$(x + 2y)(5x + 2y)$

$(x + 2y)(5x + 2y) =$ ☐ (Simplify your answer.)

Answer: $5x^2 + 12xy + 4y^2$

---

16. Use the FOIL method to multiply the binomials.

$(x - 4y)(6x + 7y)$

$(x - 4y)(6x + 7y) =$ [ ] (Simplify your answer.)

Answer: $6x^2 - 17xy - 28y^2$

---

17. Use the FOIL method to multiply the binomials.

$(4xy + 1)(2xy - 5)$

$(4xy + 1)(2xy - 5) =$ [ ] (Simplify your answer.)

Answer: $8x^2y^2 - 18xy - 5$

---

18. Find the product.

$(8x + 5y)^2$

$(8x + 5y)^2 =$ [ ]

Answer: $64x^2 + 80xy + 25y^2$

---

19. Multiply using the rule for the product of the sum and difference of two terms.

$(6x + 5y)(6x - 5y)$

$(6x + 5y)(6x - 5y) =$ [ ]

Answer: $36x^2 - 25y^2$

---

20. Factor the polynomial using the greatest common factor. If there is no common factor other than 1 and the polynomial cannot be factored, so state.

$16x + 40$

Select the correct choice below and fill in any answer boxes within your choice.

- ○ **A.** $16x + 40 =$ _____
- ○ **B.** The polynomial is prime.

Answer: A. $16x + 40 =$ **8(2x + 5)**

---

21. Factor the greatest common factor from the polynomial.

$30x^2 + 28x$

Select the correct choice below and fill in any answer boxes within your choice.

- **A.** $30x^2 + 28x =$ _____
- **B.** The polynomial is prime.

Answer: A. $30x^2 + 28x =$ **$2x(15x + 14)$**

---

22. Factor out the greatest common factor.

$8x^2 - 48x$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

- **A.** $8x^2 - 48x =$ _____
- **B.** The polynomial is prime.

Answer: A. $8x^2 - 48x =$ **$8x(x - 6)$**

---

23. Factor out the greatest common factor in the expression.

$3x^4 - 9x^3 + 33x^2$

Select the correct choice below and fill in any answer boxes within your choice.

- **A.** $3x^4 - 9x^3 + 33x^2 =$ _____
- **B.** The polynomial is prime.

Answer: A. $3x^4 - 9x^3 + 33x^2 =$ **$3x^2\left(x^2 - 3x + 11\right)$**

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24. Factor out the greatest common factor.

$x(x + 16) - 14(x + 16)$

Select the correct choice below and fill in any answer boxes within your choice.

- **A.** $x(x + 16) - 14(x + 16) =$ _____ (Type your answer in factored form.)
- **B.** The polynomial is prime.

Answer: A. $x(x + 16) - 14(x + 16) =$ **$(x - 14)(x + 16)$** (Type your answer in factored form.)

---

25. Factor by grouping.

$x^3 - 5x^2 + 6x - 30$

Select the correct choice below and fill in any answer boxes within your choice.

- **A.** $x^3 - 5x^2 + 6x - 30 =$ _____
- **B.** The polynomial is prime.

Answer: A. $x^3 - 5x^2 + 6x - 30 = \boxed{(x-5)(x^2+6)}$

---

26. Factor the following by grouping.

$x^3 - 6x^2 + 5x - 30$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

- **A.** $x^3 - 6x^2 + 5x - 30 =$ _____
- **B.** The polynomial is prime.

Answer: A. $x^3 - 6x^2 + 5x - 30 = \boxed{(x^2+5)(x-6)}$

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27. Factor the following by grouping.

$x^2 + 9x - 3x - 27$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

- **A.** $x^2 + 9x - 3x - 27 =$ _____
- **B.** The polynomial is prime.

Answer: A. $x^2 + 9x - 3x - 27 = \boxed{(x+9)(x-3)}$

---

28. Factor the given polynomial.

$x^2 + 18x + 77$

Select the correct choice below and, if necessary, fill in the answer box within your choice.

- **A.** $x^2 + 18x + 77 =$ _____
- **B.** The polynomial is prime.

Answer: A. $x^2 + 18x + 77 = \boxed{(x+11)(x+7)}$

---

29. Factor the given polynomial.

$x^2 + 18x + 77$

Select the correct choice below and, if necessary, fill in the answer box within your choice.

- **A.** $x^2 + 18x + 77 =$ _____
- **B.** The polynomial is prime.

Answer: A. $x^2 + 18x + 77 =$ **$(x + 11)(x + 7)$**

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30. Factor the trinomial, or state that the trinomial is prime.

$x^2 - 4x - 32$

Select the correct choice below and fill in any answer boxes within your choice.

- **A.** $x^2 - 4x - 32 =$ _____
- **B.** The polynomial is prime.

Answer: A. $x^2 - 4x - 32 =$ **$(x - 8)(x + 4)$**

---

31. Factor the given polynomial.

$x^2 - 10x + 24$

Select the correct choice below and, if necessary, fill in the answer box within your choice.

- **A.** $x^2 - 10x + 24 =$ _____
- **B.** The polynomial is prime.

Answer: A. $x^2 - 10x + 24 =$ **$(x - 6)(x - 4)$**

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32. Factor the trinomial completely.

$7x^2 - 34x - 5$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

- **A.** $7x^2 - 34x - 5 =$ _____ (Factor completely.)
- **B.** The polynomial is prime.

Answer: A. $7x^2 - 34x - 5 =$ **$(7x + 1)(x - 5)$** (Factor completely.)

---

33. Factor the trinomial, or state that the trinomial is prime.

$3a^2 - 4a - 20$

Select the correct choice below and fill in any answer boxes within your choice.

- **A.** $3a^2 - 4a - 20 =$ _____
- **B.** The polynomial is prime.

Answer: A. $3a^2 - 4a - 20 =$ **$(3a - 10)(a + 2)$**

---

34. Factor the following trinomial, or state that the trinomial is prime.

$6x^2 - 13x + 6$

Select the correct choice below, and if necessary, fill in the answer box to complete your choice.

- **A.** $6x^2 - 13x + 6 =$ _____
- **B.** The trinomial is prime.

Answer: A. $6x^2 - 13x + 6 =$ **$(2x - 3)(3x - 2)$**

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35. Factor the trinomial, or state that the trinomial is prime.

$4y^2 + 29y + 7$

Select the correct choice below and fill in any answer boxes within your choice.

- **A.** $4y^2 + 29y + 7 =$ _____
- **B.** The polynomial is prime.

Answer: A. $4y^2 + 29y + 7 =$ **$(y + 7)(4y + 1)$**

---

36. Factor completely.

$21x^2 - 82x + 40$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

- **A.** $21x^2 - 82x + 40 =$ _____ (Factor completely.)
- **B.** The polynomial is prime.

Answer: A. $21x^2 - 82x + 40 =$ **$(7x - 4)(3x - 10)$** (Factor completely.)

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37. Factor the trinomial completely.

$3a^2 + 5ab + 2b^2$

Select the correct choice below and fill in any answer boxes within your choice.

- **A.** $3a^2 + 5ab + 2b^2 =$ _____
- **B.** The polynomial is prime.

Answer: A. $3a^2 + 5ab + 2b^2 =$ **$(3a + 2b)(a + b)$**

---

38. Factor the trinomial, or state that the trinomial is prime.

$5a^2 - 6ab - 32b^2$

Select the correct choice below and fill in any answer box within your choice.

- **A.** $5a^2 - 6ab - 32b^2 =$ _____
- **B.** The polynomial is prime.

Answer: A. $5a^2 - 6ab - 32b^2 =$ **$(5a - 16b)(a + 2b)$**

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39. Factor the difference of two squares.

$x^2 - 25$

Select the correct choice below and fill in any answer boxes within your choice.

- **A.** $x^2 - 25 =$ _____
- **B.** The polynomial is prime.

Answer: A. $x^2 - 25 =$ **$(x + 5)(x - 5)$**

---

40. Factor the difference of two squares.

$4x^2 - 9$

Select the correct choice below and fill in any answer boxes within your choice.

- **A.** $4x^2 - 9 =$ _____
- **B.** The polynomial is prime.

Answer: A. $4x^2 - 9 =$ **$(2x + 3)(2x - 3)$**

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41. Factor the difference of two squares.

$144x^2 - 169y^2$

Select the correct choice below and fill in any answer boxes within your choice.

- **A.** $144x^2 - 169y^2 =$ _____
- **B.** The polynomial is prime.

Answer: A. $144x^2 - 169y^2 =$ **$(12x + 13y)(12x - 13y)$**

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42. Factor the following perfect square trinomial.

$y^2 + 30y + 225$

$y^2 + 30y + 225 =$ [ ] (Factor completely.)

Answer: $(y + 15)^2$

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43. Factor the perfect square.

$x^2 - 12x + 36$

Select the correct choice below and fill in any answer boxes within your choice.

- **A.** $x^2 - 12x + 36 =$ _____
- **B.** The polynomial is prime.

Answer: A. $x^2 - 12x + 36 =$ **$(x - 6)^2$**

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44. Factor the following perfect square trinomial.

$100x^2 + 20x + 1$

$100x^2 + 20x + 1 =$ [ ] (Factor completely.)

Answer: $(10x + 1)^2$

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45. Factor the trinomial completely.

$4x^2 + 20x + 16$

Select the correct choice below and fill in any answer boxes within your choice.

- **A.** $4x^2 + 20x + 16 =$ _____ (Factor completely.)
- **B.** The polynomial is prime.

Answer: A. $4x^2 + 20x + 16 =$ **$4(x + 1)(x + 4)$** (Factor completely.)

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46. Factor completely, or state that the polynomial is prime.

$x^3 - 3x^2 - 4x + 12$

Select the correct choice below and, if necessary, fill in the answer box within your choice.

- **A.** $x^3 - 3x^2 - 4x + 12 =$ _____
- **B.** The polynomial is prime.

Answer: A. $x^3 - 3x^2 - 4x + 12 =$ **$(x - 3)(x + 2)(x - 2)$**

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47. Factor the expression completely or state that the polynomial is prime.

$3x^2 - 3x - 90$

Select the correct choice below and fill in any answer boxes within your choice.

- **A.** $3x^2 - 3x - 90 =$ _____ (Factor completely.)
- **B.** The polynomial is prime.

Answer: A. $3x^2 - 3x - 90 =$ **$3(x + 5)(x - 6)$** (Factor completely.)

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48. Find all numbers for which the rational expression is undefined. If the rational expression is defined for all real numbers, so state.

$$\frac{x}{x+3}$$

Type the values for which the rational expression is undefined. Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

- **A.** _____ (Use a comma to separate answers as needed.)
- **B.** The rational expression is defined for all real numbers.

Answer: A. **−3** (Use a comma to separate answers as needed.)

---

49. Find all numbers for which the rational expression is undefined. If the rational expression is defined for all real numbers, state this.

$$\frac{y-1}{y^2-1}$$

Type the values for which the rational expression is undefined. Select the correct choice below and fill in any answer boxes within your choice.

- **A.** _____ (Use a comma to separate answers as needed.)
- **B.** The rational expression is defined for all real numbers.

Answer: A. **−1,1** (Use a comma to separate answers as needed.)

---

50. Find all numbers that must be excluded from the domain of the rational expression.

$$\frac{x-4}{x^2+5x+4}$$

Type the values for which the rational expression is undefined. Select the correct choice below and fill in any answer boxes within your choice.

- **A.** _____ (Use a comma to separate answers as needed.)
- **B.** The rational expression is defined for all real numbers.

Answer: A. **−1, −4** (Use a comma to separate answers as needed.)

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51. Simplify the rational expression. Find all numbers that must be excluded from the domain of the simplified rational expression in order for it to be equivalent to the original expression.

$$\frac{3x-15}{x^2-10x+25}$$

Simplify the rational expression.

$\frac{3x-15}{x^2-10x+25} =$ [ ] (Simplify your answer. Use positive exponents only.)

Find the numbers that must be excluded from the domain of the simplified rational expression in order for it to be equivalent to the original expression. Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

- **A.** $x \neq$ _____ (Use a comma to separate answers as needed.)
- **B.** There are no numbers excluded from the domain.

Answers $\frac{3}{x-5}$

A. $x \neq$ [**5**] (Use a comma to separate answers as needed.)

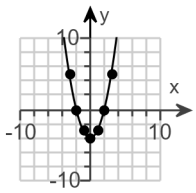
52.

Find seven ordered pairs to the equation $y = x^2 - 4$. Then determine its graph.

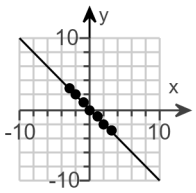
x	y
− 3	
− 2	
− 1	
0	
1	
2	
3	

Choose the graph that connects the points.

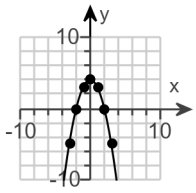
A.



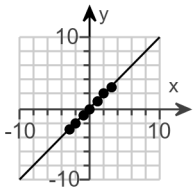
B.



C.



D.



Answers 5

0

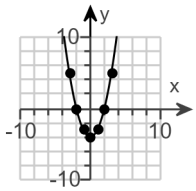
− 3

− 4

− 3

0

5



A.

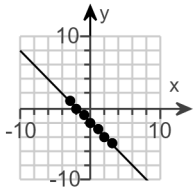
53.

Graph the equation $y = x - 2$. Let $x = -3, -2, -1, 0, 1, 2,$ and 3.

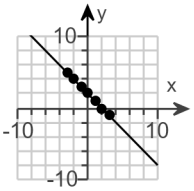
Find the following y-values. Then choose the correct graph of the equation to the right.

x	y
− 3	
− 2	
− 1	
0	
1	
2	
3	

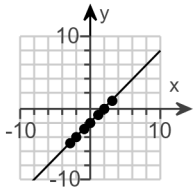
A.



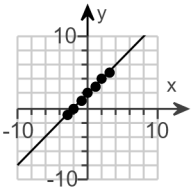
B.



C.



D.



Answers − 5

− 4

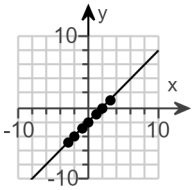
− 3

− 2

− 1

0

1



C.

54.

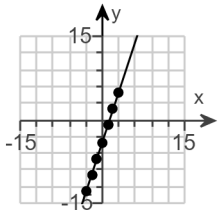
Graph the equation. Let x = − 3, − 2, − 1, 0, 1, 2, and 3.

$y = 3x - 4$

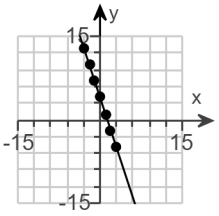
x	y
− 3	
− 2	
− 1	
0	
1	
2	
3	

Choose the graph on the right that connects the points.

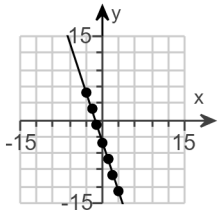
A.



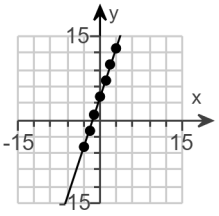
B.



C.



D.



Answers − 13

− 10

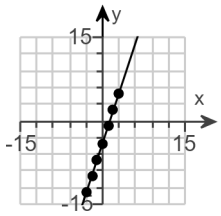
− 7

− 4

− 1

2

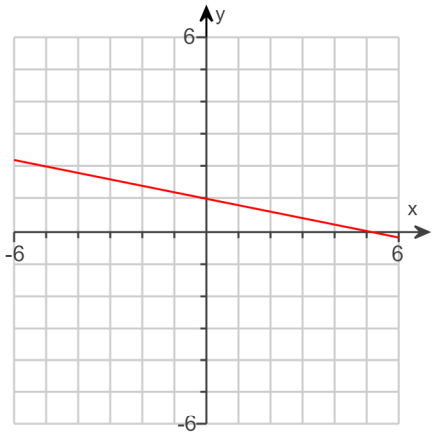
5



A.

55. Use the graph to the right to complete the following. For the graph, tick marks along the axes represent one unit each.

a. Determine the x-intercepts, if any.
b. Determine the y-intercepts, if any.



a. What is/are the x-intercept(s)? Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

- **A.** The x-intercept(s) is/are _____.
  (Type an integer or a simplified fraction. Use a comma to separate answers as needed.)
- **B.** There is no x-intercept.

b. What is/are the y-intercept(s)? Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

- **A.** The y-intercept(s) is/are _____.
  (Type an integer or a simplified fraction. Use a comma to separate answers as needed.)
- **B.** There is no y-intercept.

Answers A. The x-intercept(s) is/are **5**.
(Type an integer or a simplified fraction. Use a comma to separate answers as needed.)

A. The y-intercept(s) is/are **1**.
(Type an integer or a simplified fraction. Use a comma to separate answers as needed.)

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56. Use factoring to solve the quadratic equation. Check by substitution or by using a graphing utility and identifying x-intercepts.

$x^2 - 2x - 48 = 0$

The solution set is { }.
(Use a comma to separate answers as needed. Type repeated roots only once.)

Answer: $-6, 8$

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57. Solve the equation by factoring.

$x^2 = 3x + 40$

The solution set is { }.
(Use a comma to separate answers as needed.)

Answer: $8, -5$

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58. Solve the equation by factoring.

$8x^2 + 10x - 7 = 0$

The solution set is { }.
(Use a comma to separate answers as needed.)

Answer: $\frac{1}{2}, -\frac{7}{4}$

---

59. Use factoring to solve the quadratic equation. Check by substitution or by using a graphing utility and identifying x-intercepts.

$2x^2 = 5x + 42$

The solution set is { }.
(Use commas to separate answers as needed. Type repeated roots only once.)

Answer: $-\frac{7}{2}, 6$

---

60. Use factoring to solve the quadratic equation. Check by substitution or by using a graphing utility and identifying x-intercepts.

$3x^2 + 15x = 0$

The solution set is { }.
(Use a comma to separate answers as needed.)

Answer: $0, -5$

---

61. Solve the equation by the square root property.

$(x - 5)^2 = 25$

What is the solution set?

{ } (Use a comma to separate answers as needed.)

Answer: 0, 10

---

62. Solve the quadratic equation by completing the square.

$x^2 + 4x = 77$

What is the solution set?

{ } (Use a comma to separate answers as needed.)

Answer: $7, -11$

---

63. Solve the quadratic equation by completing the square.

$x^2 - 4x = 2$

The solution set is { }.
(Use a comma to separate answers as needed. Type an exact answer, using radicals as needed.)

Answer: $2 + \sqrt{6}, 2 - \sqrt{6}$

---

64. Solve the following equation using the quadratic formula.

$x^2 + 5x + 6 = 0$

The solution set is { }.
(Type an exact answer, using radicals as needed. Use a comma to separate answers as needed.)

Answer: $-3, -2$

---

65. Solve the equation using the quadratic formula.

$x^2 + 13x + 8 = 0$

The solution set is { }.
(Type an exact answer, using radicals as needed. Use a comma to separate answers as needed.)

Answer: $\frac{-13 + \sqrt{137}}{2}, \frac{-13 - \sqrt{137}}{2}$

---

66. Solve the following equation using the quadratic formula.

$2x^2 - 9x - 2 = 0$

The solution set is { }.
(Type an exact answer, using radicals as needed. Use a comma to separate answers as needed.)

Answer: $\frac{9 + \sqrt{97}}{4}, \frac{9 - \sqrt{97}}{4}$

---

67. Solve for x using the quadratic formula.

$x^2 - 10x + 50 = 0$

The solution set is $\{\ \}$.
(Type an exact answer, using radicals as needed. Express complex numbers in terms of i . Use a comma to separate answers as needed.)

Answer: $5 + 5i, 5 - 5i$

---

68. Solve the equation by the method of your choice.

$3x^2 - 7x = 6$

The solution set is $\{\ \}$.
(Type an exact answer, using radicals as needed. Use a comma to separate answers as needed.)

Answer: $3, -\frac{2}{3}$

---

69. Solve the equation using any method.

$3x^2 + 7 = 22x$

The solution set is $\{\ \}$.
(Simplify your answer. Type an exact answer, using radicals and i as needed. Use a comma to separate answers as needed.)

Answer: $7, \frac{1}{3}$

---

70. Solve the equation by the method of your choice.

$x^2 + 6x = 5$

The solution set is $\{\ \}$.
(Type an exact answer, using radicals as needed. Express complex numbers in terms of i. Use a comma to separate answers as needed.)

Answer: $-3 + \sqrt{14}, -3 - \sqrt{14}$

---

71. Solve the following equation.

$3x^2 - 30x + 75 = 0$

The solution set is $\{\ \}$.
(Use a comma to separate answers as needed.)

Answer: 5

---

72. Solve the given radical equation. Check all proposed solutions.

$\sqrt{2x+19} = x+8$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

- **A.** The solution set is $\{\ \}$.
  (Use a comma to separate answers as needed.)
- **B.** There is no solution.

Answer: A. The solution set is $\{-5\}$.(Use a comma to separate answers as needed.)

---

73. Use interval notation to express the solution set and graph the solution set on a number line.

$-4x \geq 20$

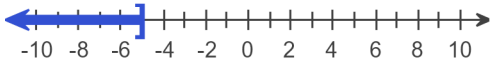
Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

- **A.** The solution set is _____. (Type your answer using interval notation.)
- **B.** The solution set is $\varnothing$.

Choose the correct graph of the inequality.

- **A.**

- **B.**

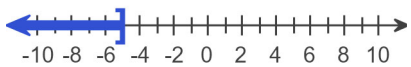


- **C.**

- **D.** The solution set is $\varnothing$.

Answers A. The solution set is $(-\infty, -5]$. (Type your answer using interval notation.)

B.



---

74. Solve the compound inequality.

$3 < 2x - 1 \leq 9$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

- **A.** The solution set is _____. (Type your answer in interval notation.)
- **B.** The solution set is the empty set.

Answer: A. The solution set is $(2,5]$. (Type your answer in interval notation.)

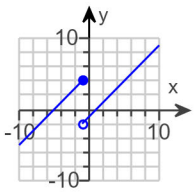
---

75. The domain of the piecewise function is $(-\infty,\infty)$.
a. Graph the function.
b. Use your graph to determine the function's range.

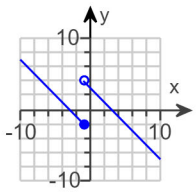
$$f(x)=\begin{cases} x+3 & \text{if } x<-1 \\ x-3 & \text{if } x\geq -1 \end{cases}$$

a. Choose the correct graph below.

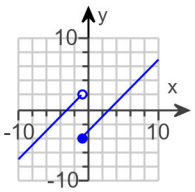
A.



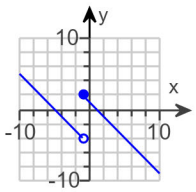
B.



C.

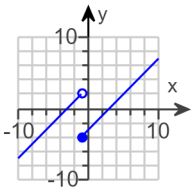


D.



b. The range of f(x) is _____. (Type your answer in interval notation.)

Answers



C.

$(-\infty,\infty)$

76. Find the domain of the function.

$$f(x)=\sqrt{12-3x}$$

What is the domain of f?

_____ (Type your answer in interval notation.)

Answer: $(-\infty,4]$

77. First find $f+g$, $f-g$, fg and $\frac{f}{g}$. Then determine the domain for each function.

$f(x)=3x^2+28x+32$, $g(x)=x+8$

$(f+g)(x)=$ ☐ (Simplify your answer.)

What is the domain of $f+g$?

- ○ $(-\infty,\infty)$
- ○ $\left(-\frac{40}{29},\infty\right)$
- ○ $[0,\infty)$
- ○ $\left(-\infty,-\frac{40}{29}\right)\cup\left(-\frac{40}{29},\infty\right)$

$(f-g)(x)=$ ☐ (Simplify your answer.)

What is the domain of $f-g$?

- ○ $\left(-\frac{40}{29},\infty\right)$
- ○ $(-\infty,\infty)$
- ○ $[0,\infty)$
- ○ $\left(-\infty,-\frac{8}{7}\right)\cup\left(-\frac{8}{7},\infty\right)$

$(fg)(x)=$ ☐

What is the domain of fg?

- ○ $\left(-\frac{8}{9},\infty\right)$
- ○ $(-\infty,-8)\cup(-8,\infty)$
- ○ $(-\infty,\infty)$
- ○ $\left(-\infty,-\frac{8}{9}\right)\cup\left(-\frac{8}{9},\infty\right)$

$\left(\frac{f}{g}\right)(x)=$ ☐ (Simplify your answer.)

What is the domain of $\frac{f}{g}$?

- ○ $(-8,\infty)$
- ○ $(-\infty,-8)\cup(-8,\infty)$
- ○ $[0,\infty)$
- ○ $(-\infty,\infty)$

Answers $3x^2 + 29x + 40$

$(-\infty, \infty)$

$3x^2 + 27x + 24$

$(-\infty, \infty)$

$3x^3 + 52x^2 + 256x + 256$

$(-\infty, \infty)$

$3x + 4$

$(-\infty, -8) \cup (-8, \infty)$

---

78. For $f(x) = 2 - x$ and $g(x) = 4x^2 + x + 4$, find the following functions.

a. $(f \circ g)(x)$; **b.** $(g \circ f)(x)$; **c.** $(f \circ g)(3)$; **d.** $(g \circ f)(3)$

a. $(f \circ g)(x) =$ [ ]
(Simplify your answer.)

b. $(g \circ f)(x) =$ [ ]
(Simplify your answer.)

c. $(f \circ g)(3) =$ [ ]

d. $(g \circ f)(3) =$ [ ]

Answers $-4x^2 - x - 2$

$4x^2 - 17x + 22$

-41

7

---

79. Find the distance between the pair of points.

(8,2) and (20,11)

The distance between the points is [ ] units.
(Round to two decimal places as needed.)

Answer: 15

---

80. Find the midpoint of the line segment with the given endpoints.

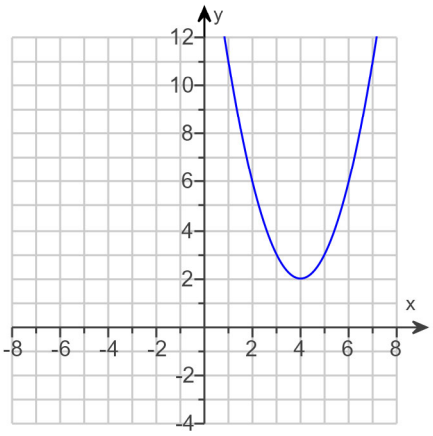
(4,2) and (10,6)

The midpoint of the segment is [ ].
(Type an ordered pair.)

Answer: (7,4)

---

81. The graph of a quadratic function is given. Select the function's equation from the choices given.



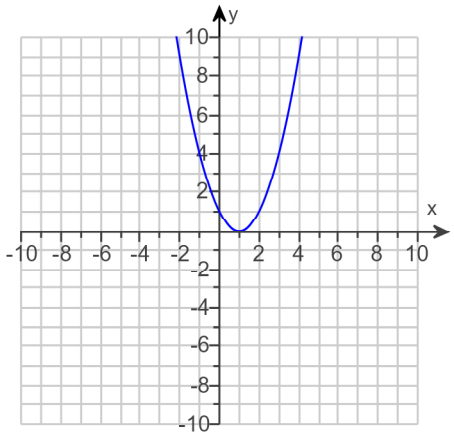
Choose the correct equation below.

- **A.** $f(x) = (x + 4)^2 + 2$
- **B.** $f(x) = (x - 4)^2 - 2$
- **C.** $f(x) = (x + 4)^2 - 2$
- **D.** $f(x) = (x - 4)^2 + 2$

Answer: D. $f(x) = (x - 4)^2 + 2$

---

82. The graph of a quadratic function is given to the right. Write the function's equation.



Choose the correct equation below.

- **A.** $f(x) = x^2 - 2x + 1$
- **B.** $f(x) = -x^2 - 1$
- **C.** $f(x) = x^2 + 2x + 1$
- **D.** $f(x) = x^2 + 1$

Answer: A. $f(x) = x^2 - 2x + 1$

---

83. In the following exercise, find the coordinates of the vertex for the parabola defined by the given quadratic function.

$f(x) = 3x^2 + 18x + 8$

The vertex is [ ]. (Type an ordered pair.)

Answer: $(-3, -19)$

---

84. In the following exercise, find the coordinates of the vertex for the parabola defined by the given quadratic function.

$f(x) = 2x^2 + 12x + 9$

The vertex is [ ]. (Type an ordered pair.)

Answer: $(-3, -9)$

---

85. Find the coordinates of the vertex for the parabola defined by the given quadratic function.

$f(x) = -x^2 + 2x + 10$

The vertex is [ ]. (Type an ordered pair.)

Answer: (1,11)

---

86. Find the coordinates of the vertex for the parabola defined by the given quadratic function.

$f(x) = -x^2 - 10x + 7$

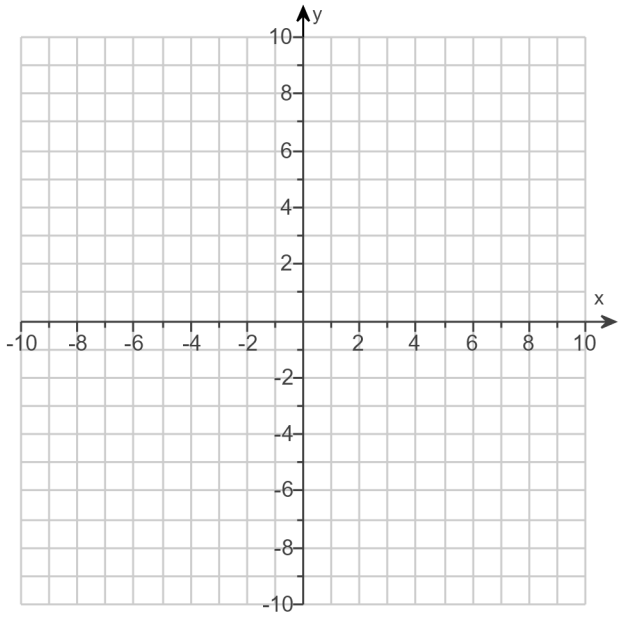
The vertex is [ ]. (Type an ordered pair.)

Answer: $(-5,32)$

87.

Use the vertex and intercepts to sketch the graph of the quadratic function. Give the equation of the parabola's axis of symmetry. Use the graph to determine the domain and range of the function.

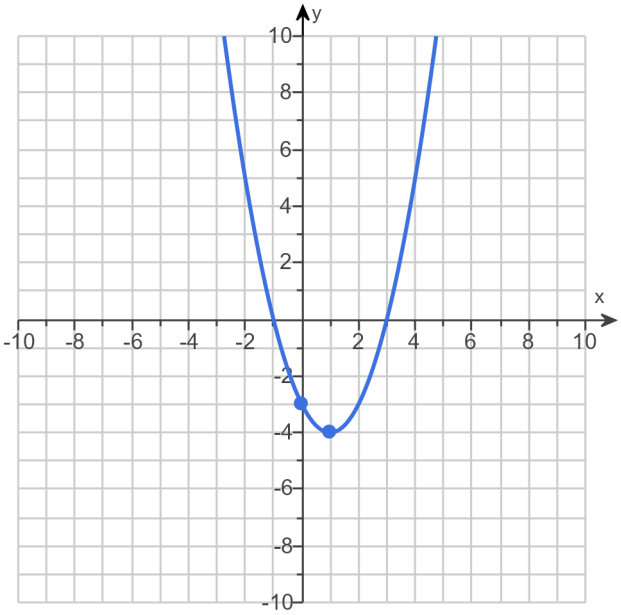
$f(x) = (x - 1)^2 - 4$



Use the graphing tool to graph the function. Use the vertex and one of the intercepts when drawing the graph.

The axis of symmetry is [ ].
(Type an equation. Simplify your answer.)
The domain of the function is [ ].
(Type your answer in interval notation.)
The range of the function is [ ].
(Type your answer in interval notation.)

Answers



$x = 1$

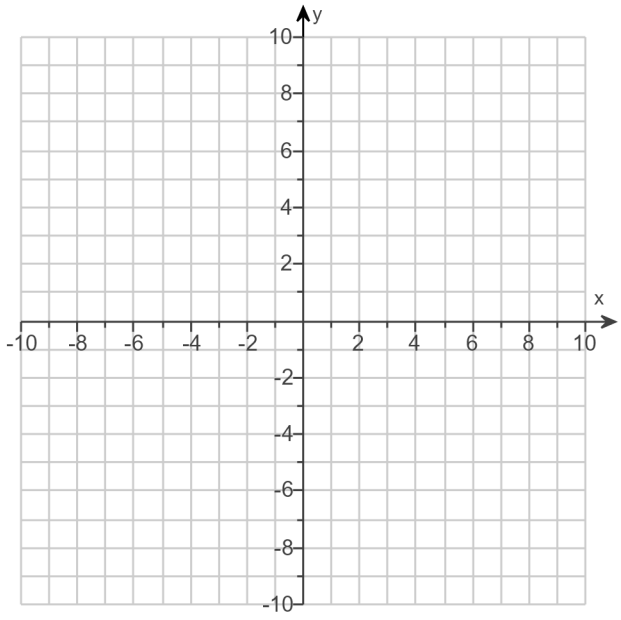
$(-\infty, \infty)$

$[-4, \infty)$

88.

Use the vertex and intercepts to sketch the graph of the quadratic function. Give the equation of the parabola's axis of symmetry. Use the graph to determine the domain and range of the function.

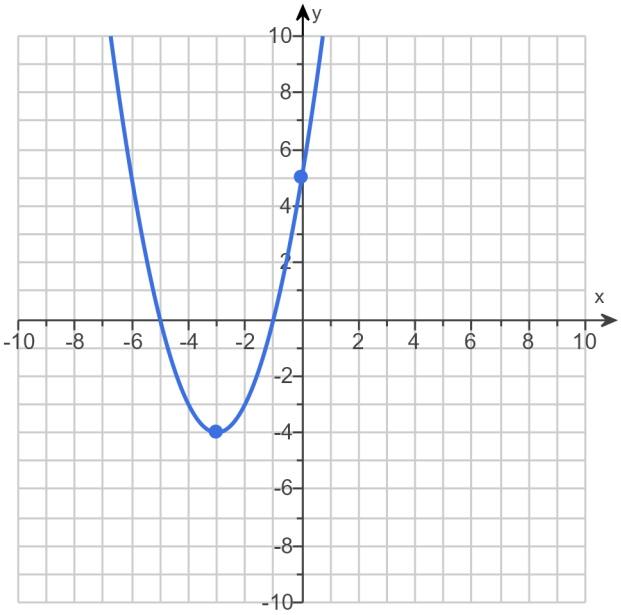
$f(x) = (x + 3)^2 - 4$



Use the graphing tool to graph the function. Use the vertex and one of the intercepts when drawing the graph.

The axis of symmetry is [ ].
(Type an equation. Simplify your answer.)
The domain of the function is [ ].
(Type your answer in interval notation.)
The range of the function is [ ].
(Type your answer in interval notation.)

Answers



$x = -3$

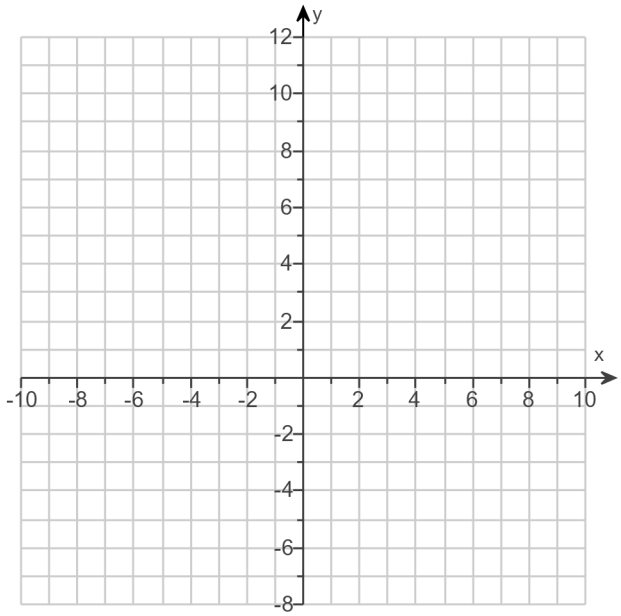
$(-\infty, \infty)$

$[-4, \infty)$

89.

Use the vertex and intercepts to sketch the graph of the quadratic function. Give the equation for the parabola's axis of symmetry. Use the parabola to identify the function's domain and range.

$f(x) = (x - 3)^2 + 1$



Use the graphing tool to graph the equation. Use the vertex and the y-intercept when drawing the graph.

The axis of symmetry is [ ].
(Simplify your answer. Type an equation.)

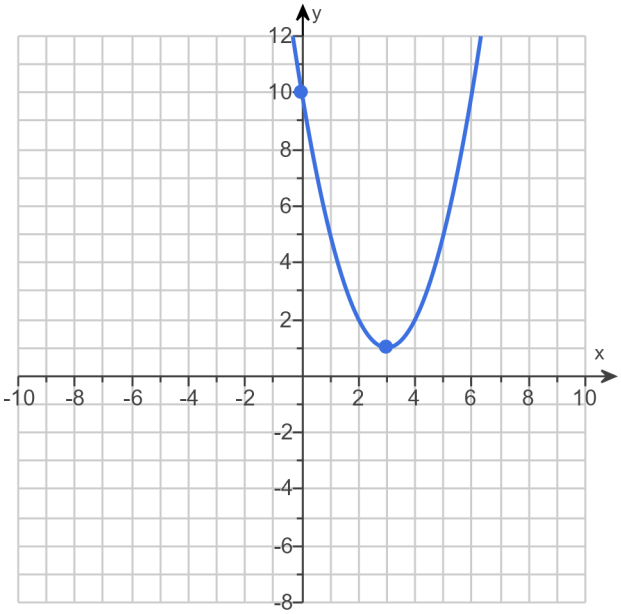
Identify the function's domain.

The domain is [ ].
(Type the answer in interval notation.)

Identify the function's range.

The range is [ ].
(Type the answer in interval notation.)

Answers



$x = 3$

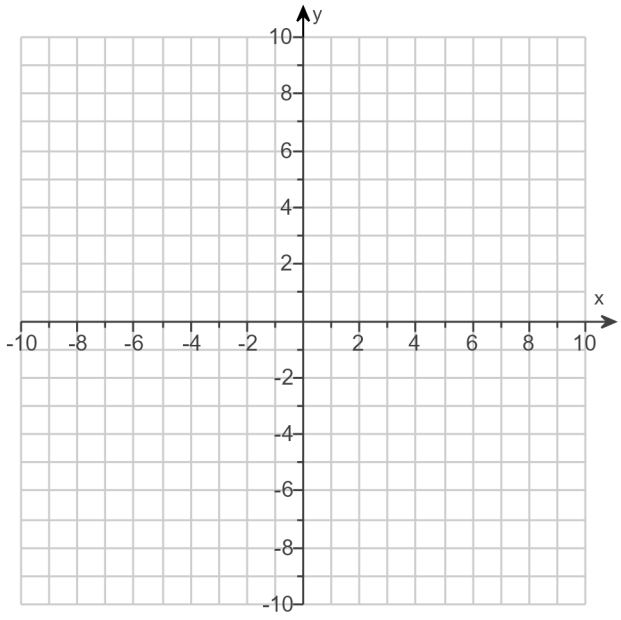
$(-\infty, \infty)$

$[1, \infty)$

90.

Use the vertex and intercepts to sketch the graph of the quadratic function. Give the equation of the parabola's axis of symmetry. Use the graph to determine the function's domain and range.

$f(x) = x^2 + 4x - 5$



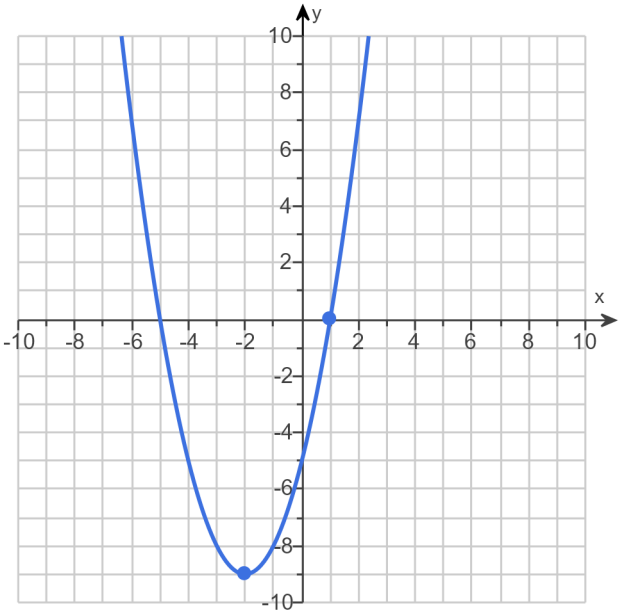
Use the graphing tool to graph the equation. Use the vertex and one of the intercepts when drawing the graph.

The axis of symmetry is ☐.
(Type an equation.)

The domain of f is ☐.
(Type your answer in interval notation.)

The range of f is ☐.
(Type your answer in interval notation.)

Answers



$x = -2$

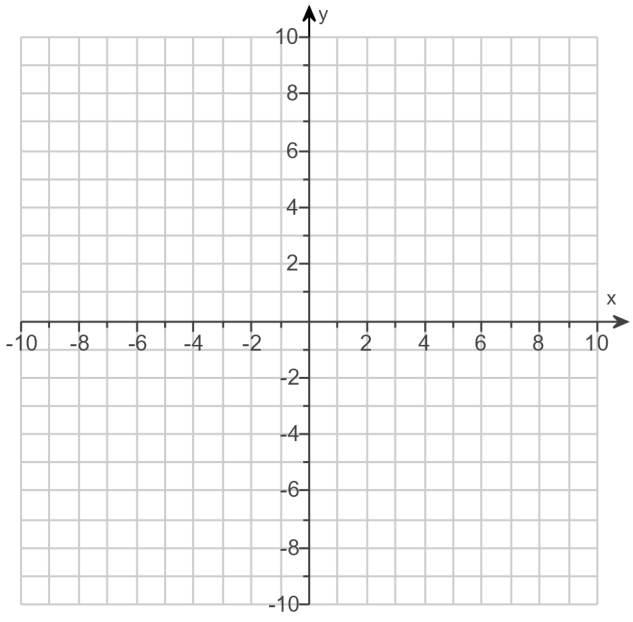
$(-\infty, \infty)$

$[-9, \infty)$

91.

Use the vertex and intercepts to sketch the graph of the quadratic function. Give the equation of the parabola's axis of symmetry. Use the graph to determine the domain and range of the function.

$f(x) = 4x - x^2 + 5$



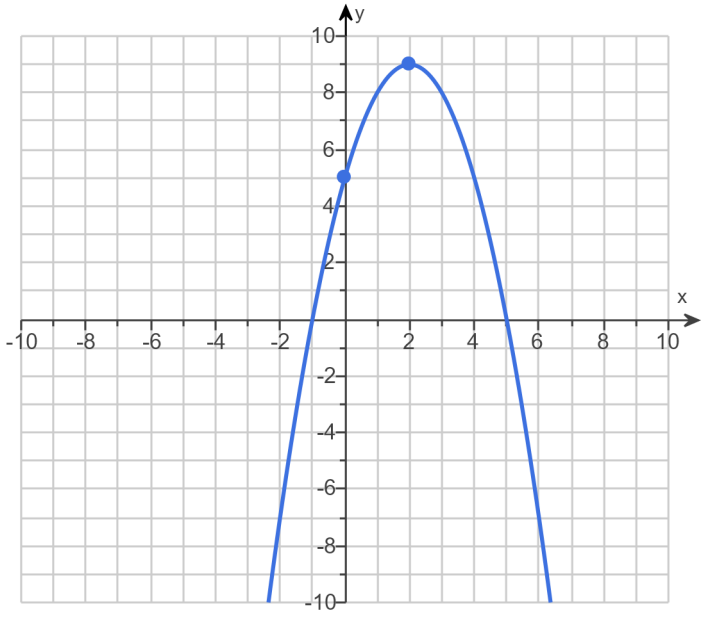
Use the graphing tool to graph the equation. Use the vertex and one of the intercepts to draw the graph.

The axis of symmetry is [ ].
(Type an equation.)

The domain of the function is [ ].
(Type your answer in interval notation.)

The range of the function is [ ].
(Type your answer in interval notation.)

Answers



$x = 2$

$(-\infty, \infty)$

$(-\infty, 9]$