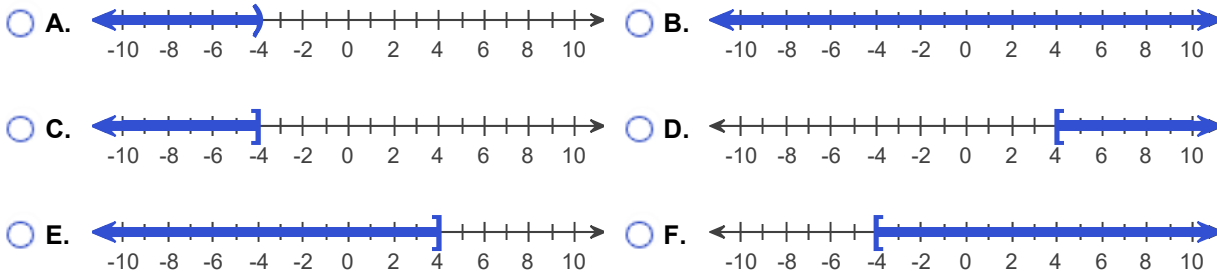| Student: _____ Date: _____	Instructor: Alfredo Alvarez Course: Math 0320 17-20 (1)	Assignment: Math 0320 Homework

1. Solve the inequality. Graph the solution set and write it in interval notation.

   $5x - 4 \leq 6x - 2x$

   Choose the graph of the solution set.

   ○ **A.**   ○ **B.**

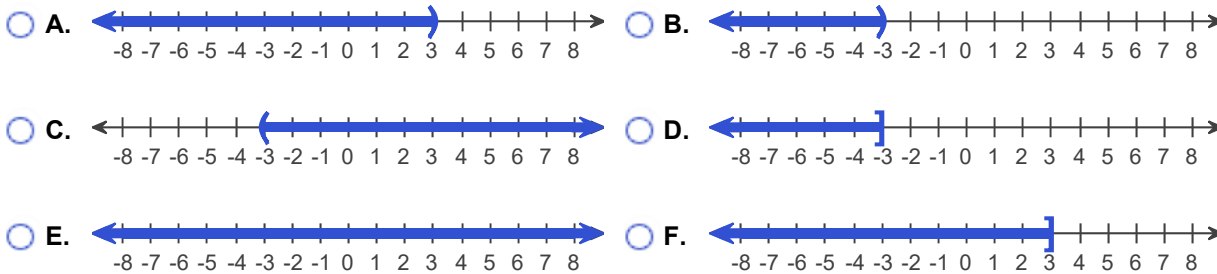   ○ **C.**   ○ **D.**

   ○ **E.**   ○ **F.**

   The solution to the inequality $5x - 4 \leq 6x - 2x$ is _____.
   (Type your answer in interval notation.)

2. Solve the inequality. Graph the solution set and write it in interval notation.

   $2x < -6$

   Choose the correct graph below.

   ○ **A.**   ○ **B.**

   ○ **C.**   ○ **D.**
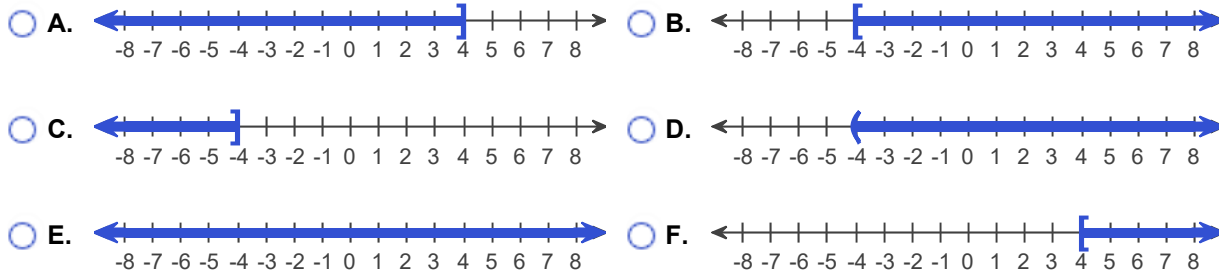
   ○ **E.**   ○ **F.**

   The solution to the inequality $2x < -6$ is _____.
   (Type your answer in interval notation.)

3. Solve the inequality. Graph the solution set and write it in interval notation.

   $-8x \leq 32$

Choose the correct graph below.

○ **A.**

○ **B.**

○ **C.**

○ **D.**

○ **E.**

○ **F.**

The solution to the inequality $-8x \leq 32$ is _____ .
(Type your answer in interval notation.)

4. Solve the inequality.

   $2x - 6 < 8x + 18$

The solution set is _____ . (Type your answer in interval notation.)

5. Solve the inequality.

   $-4x + 2 \geq 2(4 - x)$

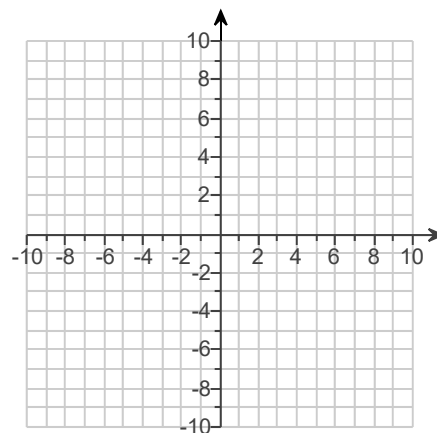The solution set is _____ . (Type your answer in interval notation.)

6. For the following equation, find three ordered pair solutions by completing the table. Then use the ordered pairs to graph the equation.

   $y = -2x + 1$

Find three ordered pair solutions of the given equation.

x	y
0	___
1	___
2	___

Use the graphing tool to graph the line.

7. Given the following function, find f(− 1), f(0), and f(2).

   $f(x) = 2x + 5$

f(− 1) = _____

f(0) = _____

f(2) = _____

8. Given the function $f(x) = |x + 8|$, find each of the following.

   $f(7), f(-7), f(0)$

   $f(7) = $ _____

   (Simplify your answer. Type an integer or a fraction.)

   $f(-7) = $ _____

   (Simplify your answer. Type an integer or a fraction.)

   $f(0) = $ _____

   (Simplify your answer. Type an integer or a fraction.)

9. Find $h(-4), h(0)$, and $h(5)$ for the following function.

   $h(x) = 2x^2 - 1$

   $h(-4) = $ _____   (Simplify your answer.)

   $h(0) = $ _____   (Simplify your answer.)

   $h(5) = $ _____   (Simplify your answer.)

10. Given the function $f(x) = 6x + 3$, find the indicated values.

    (a) f(7)
    (b) f(s)

    (a) $f(7) = $ _____   (Simplify your answer.)

    (b) $f(s) = $ _____   (Simplify your answer.)

11. Given the function $f(x) = x^2 - 7$, find the indicated values.

    a) f(7)   b) f(a)

    ---

    a) $f(7) = $ _____   (Simplify your answer.)

    b) $f(a) = $ _____   (Simplify your answer.)

12. Divide using synthetic division.

    $\left(6x^2 + 11x + 9\right) \div (x + 1)$

    $\left(6x^2 + 11x + 9\right) \div (x + 1) = $ _____

13. Factor the following four-term polynomial by grouping.

    $2x + 16 + xy + 8y$

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

    ○ **A.** $2x + 16 + xy + 8y = $ _____

    ○ **B.** The polynomial is not factorable by grouping.

14. Factor the four-term polynomial by grouping.

    $3x^2 - 9xy - 4x + 12y$

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

    ○ **A.** $3x^2 - 9xy - 4x + 12y = $ _____

    ○ **B.** The polynomial is not factorable by grouping.

15. Factor.

    $8xy - 54x^2$

    $8xy - 54x^2 = $ _____ (Factor completely.)

16. Factor out the GCF from the given polynomial.

    $3x^3y - 9x^2y + 12xy$

    $3x^3y - 9x^2y + 12xy = $ _____ (Type your answer in factored form.)

17. Factor the following polynomial.

    $-48x^6y^5 - 40x^8y^4$

    $-48x^6y^5 - 40x^8y^4 = $ _____ (Factor completely.)

18. Factor the following binomial completely.

    $x^2 - 49$

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

    ○ **A.** $x^2 - 49 = $ _____ (Factor completely.)

    ○ **B.** The polynomial is prime.

19. Factor the given binomial completely.

    $16x^2 - 25$

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

    ○ **A.** $16x^2 - 25 = $ _____

    ○ **B.** The polynomial is prime.

20. Factor the following binomial completely.

    $81x^2 - 121y^2$

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

    ○ **A.** $81x^2 - 121y^2 = $ _____ (Factor completely.)

    ○ **B.** The polynomial is prime.

---

21. Factor the binomial completely.

    $x^2 - \dfrac{1}{49}$

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

    ○ **A.** $x^2 - \dfrac{1}{49} = $ _____ (Factor completely. Simplify your answer. Use integers or fractions for any numbers in the expression.)

    ○ **B.** The polynomial is prime.

---

22. Solve the equation.

    $(x - 2)(x + 8) = 0$

    x = _____

    (Simplify your answer. Type each solution only once. Use a comma to separate answers as needed.)

---

23. Solve the equation.

    $(3x + 7)(6x - 7) = 0$

    x = _____

    (Simplify your answer. Type each solution only once. Use a comma to separate answers as needed.)

---

24. Solve.

    $x^2 + 3x - 40 = 0$

    x = _____

    (Simplify your answer. Type each solution only once. Use a comma to separate answers as needed.)

---

25. Solve.

    $x^2 - 9x = 0$

    x = _____

    (Simplify your answer. Type each solution only once. Use a comma to separate answers as needed.)

---

26. Solve the equation.

    $x^2 - 7x = 18$

    x = _____

    (Use a comma to separate answers as needed.)

---

27. Solve the equation.

$$12x^2 + 80x = 28$$

x = ⎯⎯⎯⎯⎯⎯⎯⎯⎯
(Simplify your answer. Type each solution only once. Use a comma to separate answers as needed.)

28. Solve the equation.

$$x^3 - 10x^2 + 21x = 0$$

x = ⎯⎯⎯⎯⎯⎯⎯⎯⎯
(Simplify your answer. Type each solution only once. Use a comma to separate answers as needed.)

29. Solve the equation.

$$(8x - 3)\left(64x^2 - 48x + 9\right) = 0$$

x = ⎯⎯⎯⎯⎯⎯⎯⎯⎯
(Simplify your answer. Type each solution only once. Use a comma to separate answers as needed.)

30. Solve the equation.

$$36x^3 - x = 0$$

x = ⎯⎯⎯⎯⎯⎯⎯⎯⎯
(Simplify your answer. Type each solution only once. Use a comma to separate answers as needed.)

31. Solve the equation.

$$60x^3 - 14x^2 - 8x = 0$$

x = ⎯⎯⎯⎯⎯⎯⎯⎯⎯
(Simplify your answer. Type each solution only once. Use a comma to separate answers as needed.)

32. Solve.

$$x^2 - 16 = -6x$$

x = ⎯⎯⎯⎯⎯⎯⎯⎯⎯
(Simplify your answer. Type each solution only once. Use a comma to separate answers as needed.)

33. Solve the equation.

$$12x^2 - 7x - 12 = 0$$

x = ⎯⎯⎯⎯⎯⎯⎯⎯⎯
(Simplify your answer. Type each solution only once. Use a comma to separate answers as needed.)

34. Solve.

$$5x^2 - 3x - 14 = 0$$

x = ⎯⎯⎯⎯⎯⎯⎯⎯⎯
(Simplify your answer. Type each solution only once. Use a comma to separate answers as needed.)

35. Solve the equation.

$$4x^2 - 6x - 54 = 0$$

x = _____
(Simplify your answer. Type each solution only once. Use a comma to separate answers as needed.)

36. Find the domain of the rational function.

$$f(x) = \frac{3x}{11 - x}$$

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

○ **A.** $\{x \mid x$ is a real number and $x \neq$ _____ $\}$

○ **B.** $\{x \mid x$ is a real number$\}$

37. Find the domain of the rational function.

$$C(x) = \frac{x + 4}{x^2 - 9}$$

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

○ **A.** The domain is $\{x \mid x$ is a real number and $x \neq$ _____ $\}$.
(Simplify your answer. Type an integer or a fraction. Use a comma to separate answers as needed.)

○ **B.** The domain is $\{x \mid x$ is a real number$\}$.

38. Simplify the expression.

$$\frac{5}{35a - 10}$$

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

○ **A.** $\dfrac{5}{35a - 10} =$ _____ (Simplify your answer.)

○ **B.** The expression cannot be simplified.

39. Simplify the expression.

$$\frac{-6x + 6y}{x - y}$$

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

○ **A.** $\dfrac{-6x + 6y}{x - y} =$ _____ (Simplify your answer.)

○ **B.** The expression cannot be simplified.

40. Simplify the expression.

$$\frac{6x - 30}{x^2 - 5x}$$

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

○ **A.** $\dfrac{6x - 30}{x^2 - 5x} =$ _____ (Simplify your answer.)

○ **B.** The expression cannot be simplified.

41. Simplify the expression.

$$\frac{x + 4}{x^2 - x - 20}$$

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

○ **A.** $\dfrac{x + 4}{x^2 - x - 20} =$ _____ (Simplify your answer.)

○ **B.** The expression cannot be simplified.

42. Simplify the expression.

$$\frac{3x^2 + 10x + 8}{x + 2}$$

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

○ **A.** $\dfrac{3x^2 + 10x + 8}{x + 2} =$ _____ (Simplify your answer.)

○ **B.** The expression cannot be simplified.

43. Simplify the expression.

$$\frac{4x^2 - 100}{12x - 60}$$

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

○ **A.** $\dfrac{4x^2 - 100}{12x - 60} =$ _____

(Simplify your answer. Use integers or fractions for any numbers in the expression.)

○ **B.** The expression cannot be simplified.

44. Find the function value.

     If $f(x) = \dfrac{x + 12}{2x - 1}$, find f(4), f(0), and f(− 3).

    f(4) = _____ (Type an integer or a simplified fraction.)

    f(0) = _____ (Type an integer or a simplified fraction.)

    f(− 3) = _____ (Type an integer or a simplified fraction.)

45.
    Find each function value. If $g(x) = \dfrac{x^2 + 8}{x^3 - 25x}$, find g(3), g(− 1), and g(1).

    g(3) = _____
    (Type an integer or a simplified fraction.)

    g(− 1) = _____
    (Type an integer or a simplified fraction.)

    g(1) = _____
    (Type an integer or a simplified fraction.)

46. Multiply. Simplify if possible.

    $\dfrac{18x}{9} \cdot \dfrac{x^5}{2x^3}$

    $\dfrac{18x}{9} \cdot \dfrac{x^5}{2x^3} =$ _____

47. Find the product and simplify if possible.

    $\dfrac{x}{5x - 20} \cdot \dfrac{x^2 - 4x}{9}$

    $\dfrac{x}{5x - 20} \cdot \dfrac{x^2 - 4x}{9} =$ _____
    (Simplify your answer. Use integers or fractions for any numbers in the expression.)

48. Multiply. Simplify if possible.

    $\dfrac{2x + 2}{5} \cdot \dfrac{10}{16x + 16}$

    $\dfrac{2x + 2}{5} \cdot \dfrac{10}{16x + 16} =$ _____

49. Find the product and simplify if possible.

$$\frac{x^2 - 64}{x^2 - 5x - 24} \cdot \frac{x + 3}{x}$$

$$\frac{x^2 - 64}{x^2 - 5x - 24} \cdot \frac{x + 3}{x} = \underline{\hspace{2cm}}$$ (Simplify your answer.)

---

50. Find the quotient and simplify.

$$\frac{r^2 - s^2}{r - s} \div \frac{r}{r^2 - sr}$$

$$\frac{r^2 - s^2}{r - s} \div \frac{r}{r^2 - sr} = \underline{\hspace{2cm}}$$ (Simplify your answer.)

---

51. Find the quotient and simplify the result.

$$\frac{x + 2}{8 - x} \div \frac{x^2 - 13x + 36}{x^2 - 17x + 72}$$

$$\frac{x + 2}{8 - x} \div \frac{x^2 - 13x + 36}{x^2 - 17x + 72} = \underline{\hspace{2cm}}$$ (Simplify your answer.)

---

52. Find the quotient and simplify.

$$\frac{x^2 + 10x + 16}{x - 1} \div \frac{x^2 - x - 6}{x - 1}$$

$$\frac{x^2 + 10x + 16}{x - 1} \div \frac{x^2 - x - 6}{x - 1} = \underline{\hspace{2cm}}$$ (Type your answer in factored form.)

---

53. Divide.

$$\frac{2x - 12}{75} \div \frac{25x - 150}{50}$$

$$\frac{2x - 12}{75} \div \frac{25x - 150}{50} = \underline{\hspace{2cm}}$$
(Type an integer or a simplified fraction.)

---

54. Divide.

$$\frac{5}{4x^2 - q} \div \frac{15}{20x^2 - 5q}$$

$\dfrac{5}{4x^2 - q} \div \dfrac{15}{20x^2 - 5q} =$ _____ (Simplify your answer.)

55. Subtract the rational expressions and simplify if possible.

$$\frac{8x}{4x - 7} - \frac{14}{4x - 7}$$

$\dfrac{8x}{4x - 7} - \dfrac{14}{4x - 7} =$ _____ (Simplify your answer.)

56. Add. Simplify the result if possible.

$$\frac{3}{9 + y} + \frac{y + 2}{9 + y}$$

$\dfrac{3}{9 + y} + \dfrac{y + 2}{9 + y} =$ _____ (Simplify your answer.)

57. Subtract. Simplify the result if possible.

$$\frac{7x^2 + 4x}{x - 6} - \frac{41x + 30}{x - 6}$$

$\dfrac{7x^2 + 4x}{x - 6} - \dfrac{41x + 30}{x - 6} =$ _____ (Simplify your answer.)
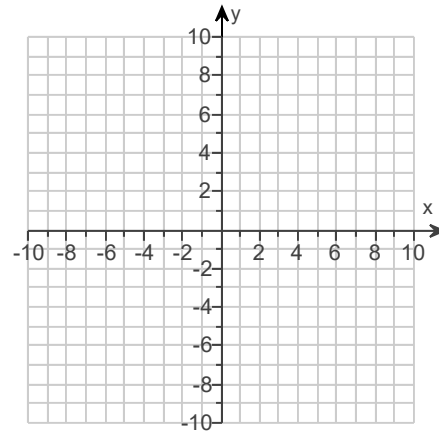
58. Subtract the rational expressions.

$$\frac{5x - 11}{x^2 - 7x - 8} - \frac{4x - 12}{x^2 - 7x - 8}$$

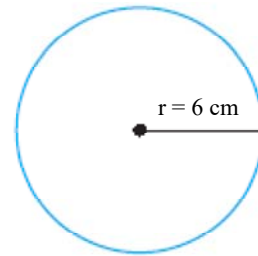$\dfrac{5x - 11}{x^2 - 7x - 8} - \dfrac{4x - 12}{x^2 - 7x - 8} =$ _____ (Simplify your answer.)

59. Graph the linear equation.

    $f(x) = -2x + 6$

    Use the graphing tool to graph the linear equation.

60. The function $A(r) = \pi r^2$ may be used to find the area of a circle with radius r.
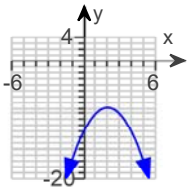   Find the area of a circle whose radius is 6 centimeters.

    r = 6 cm

    The area of a circle is _____ square centimeters.
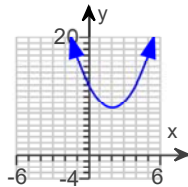   (Type an exact answer in terms of π.)

61. Graph $y = x^2 - 4x + 12$. Let x = 0, 1, 2, 3, 4 to generate ordered pair solutions.

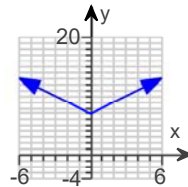   Choose the correct graph below.
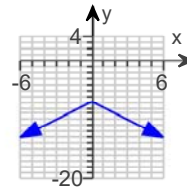
    ○ **A.**   ○ **B.**   ○ **C.**   ○ **D.**

62. Solve the compound inequality.

    $-20 \le 2x - 10 \le 4$

    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. Simplify your answer. Use integers or fractions for any numbers in the expression.)
    ○ **B.** The solution set is ∅.

63. Solve the absolute value equation.

$$|2x - 11| = 17$$

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

○ **A.** The solution set is { _____ }.
  (Type an integer or a simplified fraction. Use a comma to separate answers as needed.)

○ **B.** The solution set is ∅.

64. Solve the inequality. Then graph the solution set.
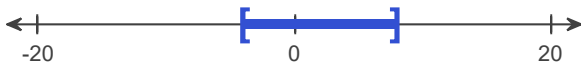
$$|x - 2| < 6$$

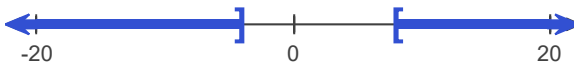Select the correct choice below and, if necessary, fill in the answer box within your choice.

○ **A.** The solution is one or more intervals. The solution is _____ .
  (Simplify your answer. Type your answer in interval notation. Use integers or fractions for any numbers in the expression.)

○ **B.** There are only one or two solutions. The solution set is { _____ }.
  (Type an integer or a fraction. Use a comma to separate answers as needed.)

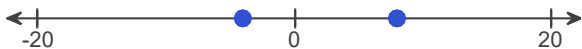○ **C.** There is no solution.

Choose the correct graph below.

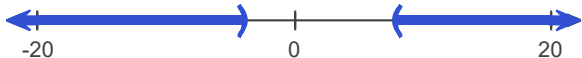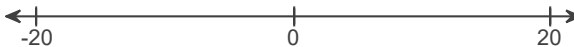○ **A.**

○ **B.**

○ **C.**
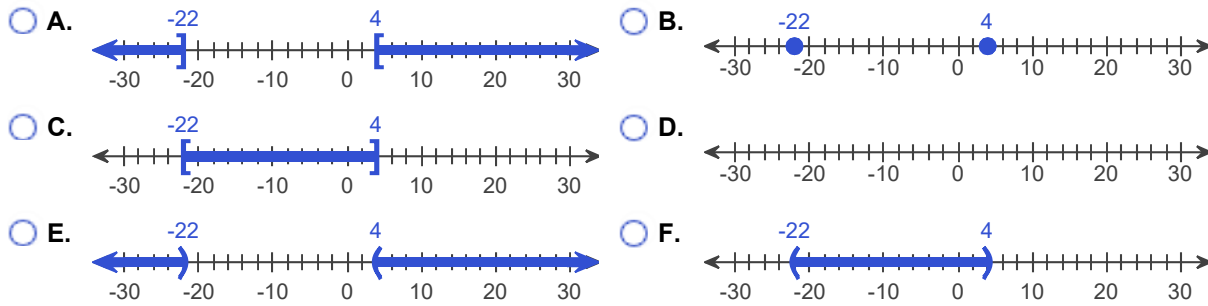

○ **D.**

○ **E.**

○ **F.**

65. Solve the inequality. Graph the solution set.

$$|x + 9| \geq 13$$

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

○ **A.** The solution is one or more intervals. The solution is _____ .
(Type your answer in interval notation. Simplify your answer. Use integers or fractions for any numbers in the expression.)

○ **B.** There are only one or two solutions. The solution set is {_____}.
(Use a comma to separate answers as needed.)

○ **C.** There is no solution.

Choose the correct graph below.

○ **A.**

-22   4

$\longleftarrow$ +++++++++++++ +++++++++ $\longrightarrow$
-30   -20   -10   0   10   20   30

○ **B.**

-22   4

$\longleftarrow$ +++●++++++++++++●++++++++ $\longrightarrow$
-30   -20   -10   0   10   20   30

○ **C.**

-22   4

$\longleftarrow$ +++[═══════════]++++++++++ $\longrightarrow$
-30   -20   -10   0   10   20   30

○ **D.**

$\longleftarrow$ ++++++++++++++++++++++++++ $\longrightarrow$
-30   -20   -10   0   10   20   30

○ **E.**

-22   4

$\longleftarrow$ +++)++++++++++(++++++++ $\longrightarrow$
-30   -20   -10   0   10   20   30

○ **F.**

-22   4

$\longleftarrow$ +++(══════════)++++++++++ $\longrightarrow$
-30   -20   -10   0   10   20   30

66. Find the square root.

$$\sqrt{484}$$

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

○ **A.** The square root is _____ .

○ **B.** The square root is not a real number.

67. Simplify by factoring. Assume that all variables under radicals represent nonnegative numbers.

$$\sqrt{9x^6}$$

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

○ **A.** $\sqrt{9x^6}$ = _____
(Type an exact answer, using radicals as needed.)

○ **B.** The square root is not a real number.

68. Find the cube root.

$$\sqrt[3]{-27x^{15}}$$

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

○ **A.** $\sqrt[3]{-27x^{15}}$ = _____ (Simplify your answer.)

○ **B.** The root is not a real number.

69. Find the root. Assume that the variable represents a nonnegative real number.

$$\sqrt{121x^{14}}$$

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

○ **A.** $\sqrt{121x^{14}} =$ _____ (Simplify your answer.)

○ **B.** The root is not a real number.

70. Find the root. Assume that the variable represents a nonnegative real number.

$$\sqrt{16x^{26}}$$

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

○ **A.** $\sqrt{16x^{26}} =$ _____ (Simplify your answer.)

○ **B.** The root is not a real number.

71. Simplify the radical. Assume that all variables represent positive real numbers.

$$\sqrt[3]{27x^3}$$

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

○ **A.** $\sqrt[3]{27x^3} =$ _____

○ **B.** The radical does not represent a real number.

72. Simplify the radical. Assume that all variables represent positive real numbers.

$$\sqrt{25a^6b^{30}}$$

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

○ **A.** $\sqrt{25a^6b^{30}} =$ _____

○ **B.** The square root is not a real number.

73. Simplify the radical. Assume that all variables represent positive real numbers.

$$\sqrt{49a^{10}b^{34}}$$

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

○ **A.** $\sqrt{49a^{10}b^{34}} =$ _____

○ **B.** The square root is not a real number.

74. Simplify the radical. Assume that all variables represent positive real numbers.

$$\sqrt[3]{-64x^{12}y^9}$$

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

○ **A.** $\sqrt[3]{-64x^{12}y^9} =$ _____

○ **B.** The radical does not represent a real number.

75. If $f(x) = \sqrt{3x + 17}$, find f(0).

f(0) = _____ (Type an exact answer, using radicals as needed.)

76. If $f(x) = \sqrt{2x + 3}$, find f(2).

f(2) = _____ (Type an exact answer, using radicals as needed.)

77. Use radical notation to write the expression. Simplify, if possible.

$$512^{1/3}$$

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

○ **A.** $512^{1/3} =$ _____ (Simplify your answer. Type an exact answer, using radicals as needed.)

○ **B.** The answer is not a real number.

78. Use radical notation to rewrite the expression. Simplify if possible.

$$1024^{3/5}$$

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

○ **A.** $1024^{3/5} =$ _____
(Simplify your answer. Type an exact answer, using radicals as needed.)

○ **B.** The answer is not a real number.

79. Simplify by factoring.

$\sqrt{50}$

$\sqrt{50} =$ _____
(Type an exact answer, using radicals as needed.)

80. Express in simplified form.

$\sqrt[3]{1250}$

$\sqrt[3]{1250} =$ _____ $\cdot \sqrt[3]{}$

81. Simplify. Assume that the variable represents a nonnegative real number.

$$\sqrt{49x^5}$$

$\sqrt{49x^5} =$ _____ (Type an exact answer, using radicals as needed.)

82. Simplify. Assume that all variables represent positive real numbers.

$$\sqrt[3]{32x^7}$$

$\sqrt[3]{32x^7}$ = _____

(Type an exact answer, using radicals as needed. Simplify your answer.)

83. Simplify. Assume that the variables represent nonnegative real numbers.

$$\sqrt{25a^2b^3}$$

$\sqrt{25a^2b^3}$ = _____ (Type an exact answer, using radicals as needed.)

84. Simplify. Assume that all variables represent positive real numbers.

$$\sqrt[3]{81x^{15}y^4}$$

$\sqrt[3]{81x^{15}y^4}$ = _____

(Use integers or fractions for any numbers in the expression. Type an exact answer, using radicals as needed.)

85. Solve.

$$\sqrt{x-13} = 4$$

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

○ **A.** The solution(s) is(are) x = _____ .
(Use a comma to separate answers as needed.)

○ **B.** The solution set is ∅.

86. Add.

$$(9 - 9i) + (2 + 8i)$$

$(9 - 9i) + (2 + 8i)$ = _____

(Simplify your answer. Type your answer in the form a + bi.)

87. Subtract.

$$(4 + 3i) - (8 - 6i)$$

$(4 + 3i) - (8 - 6i)$ = _____

(Simplify your answer. Type your answer in the form a + bi.)

88. Multiply.

$$(3 + 9i)(4 + i)$$

$(3 + 9i)(4 + i)$ = _____

(Simplify your answer. Type your answer in the form a + bi.)

89. Perform the indicated operation.

$$\frac{5 - 6i}{5 + i}$$

$\dfrac{5 - 6i}{5 + i} =$ _____

(Type your answer in the form a + bi. Use integers or fractions for any numbers in the expression.)

---

90. Use the square root property to solve the equation. The equation has real number solutions.

$$(x + 9)^2 = 16$$

$x =$ _____

(Simplify your answer. Type an exact answer, using radicals as needed. Use a comma to separate answers as needed.)

---

91. Use the quadratic formula to solve the equation.

$$m^2 - 6m - 7 = 0$$

$m =$ _____

(Simplify your answer. Type an exact answer, using radicals as needed. Use a comma to separate answers as needed.)

---

92. Use the quadratic formula to solve the equation. The equation has real number solutions.

$$8y = 4y^2 + 3$$

$y =$ _____

(Type a simplified answer, using fractions and radicals as needed. Use a comma to separate answers as needed.)

---

93. Use the quadratic formula to solve the equation.

$$x^2 - 4x + 4 = 0$$

$x =$ _____

(Simplify your answer. Type an exact answer, using radicals as needed. Use a comma to separate answers as needed.)

---

94. Use the quadratic formula to solve the equation.

$$x^2 - 3x - 3 = 0$$

$x =$ _____

(Type an exact answer, using radicals as needed. Use a comma to separate answers as needed.)

---

95. Use the quadratic formula to solve the equation.

$$10m^2 + 2m = 9$$

$m =$ _____

(Type an exact answer, using radicals and i as needed. Use a comma to separate answers as needed.)

96. Use the quadratic formula to solve the equation.

$x^2 + 4x + 29 = 0$

The solution(s) is/are x = _____ .
(Simplify your answer. Type an exact answer, using radicals and i as needed. Use a comma to separate answers as needed.)
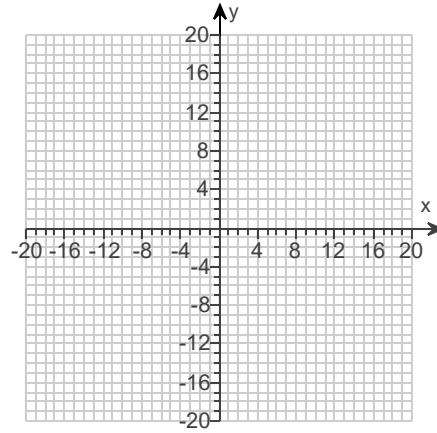
97. Sketch the graph of the quadratic function and the axis of symmetry. State the vertex, and give the equation for the axis of symmetry.

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

Use the graphing tool to graph the function as a solid curve and the axis of symmetry as a dashed line.

The vertex is _____ .
(Type an ordered pair.)

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

98. Find the vertex of the graph of the following quadratic function.

$f(x) = -5x^2 - 10x - 6$

The vertex is _____ .
(Type an ordered pair.)

99. One type of uranium has a daily radioactive decay rate of 0.4%. If 30 pounds of this uranium is available today, find how much will still remain after 30 days.
Use $y = 30(2.7)^{-0.004t}$ and let t be 30 days.

The quantity left after 30 days is _____ pounds.
(Round to the nearest tenth as needed.)

100. Find the amount Erica owes at the end of 5 years if $5100 is loaned to her at a rate of 7% compounded monthly. Use $A = P\left(1 + \dfrac{r}{n}\right)^{nt}$.

The amount owed is $ _____ .
(Do not round until the final answer. Then round to the nearest cent as needed.)

101. Find the total amount a college student has in a savings account if $9,000 was invested and earned 5% compounded quarterly for 9 years. Use $A = P\left(1 + \dfrac{r}{n}\right)^{nt}$.
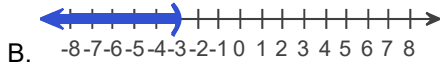
The amount after 9 years will be $ _____ .
(Do not round until the final answer. Then round to the nearest cent as needed.)
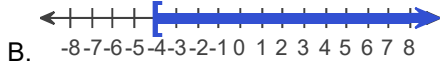
1.

E.   -10 -8 -6 -4 -2 0 2 4 6 8 10

$(-\infty, 4]$

2.

B.   -8 -7 -6 -5 -4 -3 -2 -1 0 1 2 3 4 5 6 7 8

$(-\infty, -3)$

3.

B.   -8 -7 -6 -5 -4 -3 -2 -1 0 1 2 3 4 5 6 7 8

$[-4, \infty)$

---

4. $(-4, \infty)$

---

5. $(-\infty, -3]$

---

6. 1

   -1

   -3

---
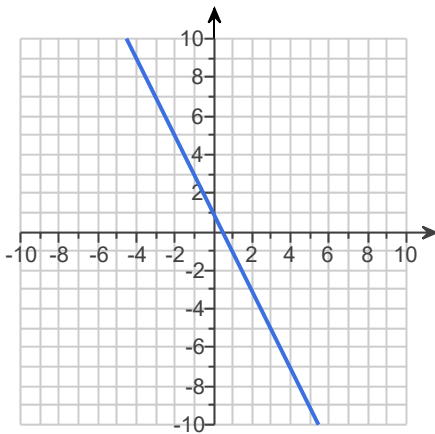
7. 3

   5

   9

---

8. 15

1

8

---

9. 31

− 1

49

---

10. 45

6s + 3

---

11. 42

$a^2 − 7$

---

12. $6x + 5 + \dfrac{4}{x + 1}$

---

13. A. 2x + 16 + xy + 8y = __(2 + y)(x + 8)__

---

14. A. $3x^2 − 9xy − 4x + 12y =$ __(3x − 4)(x − 3y)__

---

15. 2x(4y − 27x)

---

16. $3xy\left(x^2 − 3x + 4\right)$

---

17. $8x^6y^4\left(−6y − 5x^2\right)$

---

18. A. $x^2 − 49 =$ __(x + 7)(x − 7)__ (Factor completely.)

---

19. A. $16x^2 − 25 =$ __(4x + 5)(4x − 5)__

---

20. A. $81x^2 − 121y^2 =$ __(9x + 11y)(9x − 11y)__ (Factor completely.)

---

21. A.

$x^2 - \dfrac{1}{49} = \underline{\left(x + \dfrac{1}{7}\right)\left(x - \dfrac{1}{7}\right)}$ (Factor completely. Simplify your answer. Use integers or fractions for any numbers in the

  expression.)

---

22. $2, -8$

---

23. $-\dfrac{7}{3}, \dfrac{7}{6}$

---

24. $-8, 5$

---

25. $0, 9$

---

26. $9, -2$

---

27. $\dfrac{1}{3}, -7$

---

28. $0, 3, 7$

---

29. $\dfrac{3}{8}$

---

30. $0, \dfrac{1}{6}, -\dfrac{1}{6}$

---

31. $0, \dfrac{1}{2}, -\dfrac{4}{15}$

---

32. $-8, 2$

---

33. $-\dfrac{3}{4}, \dfrac{4}{3}$

---

34. $-\dfrac{7}{5}, 2$

---

35. $-3, \dfrac{9}{2}$

___

36. A. $\left\{ x \middle| \text{ x is a real number and } x \neq \underline{\quad \textbf{11} \quad} \right\}$

___

37. A. The domain is $\left\{ x \mid \text{ x is a real number and } x \neq \underline{\quad \textbf{−3,3} \quad} \right\}$.
   (Simplify your answer. Type an integer or a fraction. Use a comma to separate answers as needed.)

___

38. A. $\dfrac{5}{35a - 10} = \underline{\dfrac{\textbf{1}}{\textbf{7a − 2}}}$ (Simplify your answer.)

___

39. A. $\dfrac{-6x + 6y}{x - y} = \underline{\quad \textbf{−6} \quad}$ (Simplify your answer.)

___

40. A. $\dfrac{6x - 30}{x^2 - 5x} = \underline{\dfrac{\textbf{6}}{\textbf{x}}}$ (Simplify your answer.)

___

41. A. $\dfrac{x + 4}{x^2 - x - 20} = \underline{\dfrac{\textbf{1}}{\textbf{x − 5}}}$ (Simplify your answer.)

___

42. A. $\dfrac{3x^2 + 10x + 8}{x + 2} = \underline{\quad \textbf{3x + 4} \quad}$ (Simplify your answer.)

___

43. A. $\dfrac{4x^2 - 100}{12x - 60} = \underline{\dfrac{\textbf{x + 5}}{\textbf{3}}}$ (Simplify your answer. Use integers or fractions for any numbers in the expression.)

___

44. $\dfrac{16}{7}$

   -12

   $-\dfrac{9}{7}$

___

45. $-\dfrac{17}{48}$

   $\dfrac{3}{8}$

   $-\dfrac{3}{8}$

___

46. x^3

47. $\dfrac{x^2}{45}$

48. $\dfrac{1}{4}$

49. $\dfrac{x+8}{x}$

50. $r^2 - s^2$

51. $-\dfrac{x+2}{x-4}$

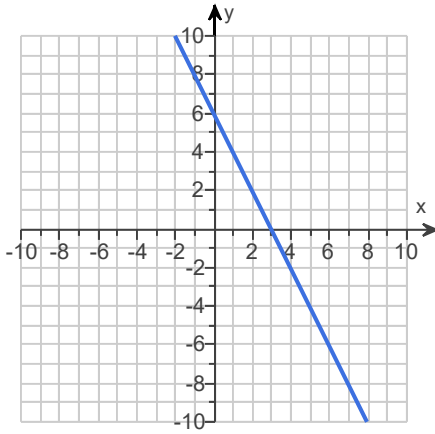52. $\dfrac{x+8}{x-3}$

53. $\dfrac{4}{75}$

54. $\dfrac{5}{3}$
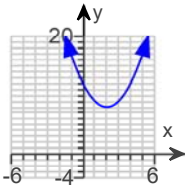
55. 2

56. $\dfrac{y+5}{9+y}$

57. $7x+5$

58. $\dfrac{1}{x-8}$

59.

---

60. 36π

61.

B.

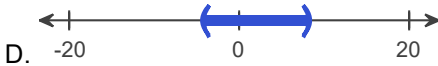
62. A. The solution set is ___**[− 5,7]**___ .

(Type your answer in interval notation. Simplify your answer. Use integers or fractions for any numbers in the expression.)

---

63. A. The solution set is { ___**14, − 3**___ }.

(Type an integer or a simplified fraction. Use a comma to separate answers as needed.)

---

64. A. The solution is one or more intervals. The solution is ___**(− 4,8)**___ .
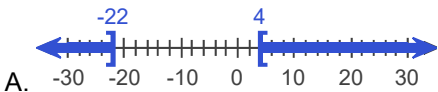
(Simplify your answer. Type your answer in interval notation. Use integers or fractions for any numbers in the expression.)

D.

---

65. A. The solution is one or more intervals. The solution is **(− ∞, − 22] ∪ [4,∞)** .

(Type your answer in interval notation. Simplify your answer. Use integers or fractions for any numbers in the expression.)

A.

---

66. A. The square root is ___**22**___ .

---

67. A. $\sqrt{9x^6}$ = ___**$3x^3$**___ (Type an exact answer, using radicals as needed.)

---

68. A. $\sqrt[3]{-27x^{15}}$ = ____**$-3x^5$**____ (Simplify your answer.)

69. A. $\sqrt{121x^{14}}$ = ____**$11x^7$**____ (Simplify your answer.)

70. A. $\sqrt{16x^{26}}$ = ____**$4x^{13}$**____ (Simplify your answer.)

71. A. $\sqrt[3]{27x^3}$ = ____**$3x$**____

72. A. $\sqrt{25a^6b^{30}}$ = ____**$5a^3b^{15}$**____

73. A. $\sqrt{49a^{10}b^{34}}$ = ____**$7a^5b^{17}$**____

74. A. $\sqrt[3]{-64x^{12}y^9}$ = ____**$-4x^4y^3$**____

75. $\sqrt{17}$

76. $\sqrt{7}$

77. A. $512^{1/3}$ = ____**8**____ (Simplify your answer. Type an exact answer, using radicals as needed.)

78. A. $1024^{3/5}$ = ____**64**____ (Simplify your answer. Type an exact answer, using radicals as needed.)

79. $5\sqrt{2}$

80. 5

    10

81. $7x^2\sqrt{x}$

82. $2x^2\sqrt[3]{4x}$

83. $5ab\sqrt{b}$

84. $3x^5y\sqrt[3]{3y}$

85. A. The solution(s) is(are) x = _____**29**_____ . (Use a comma to separate answers as needed.)

86. $11 - i$

87. $-4 + 9i$

88. $3 + 39i$

89. $\dfrac{19}{26} - \dfrac{35}{26}i$

90. $-5, -13$

91. $7, -1$
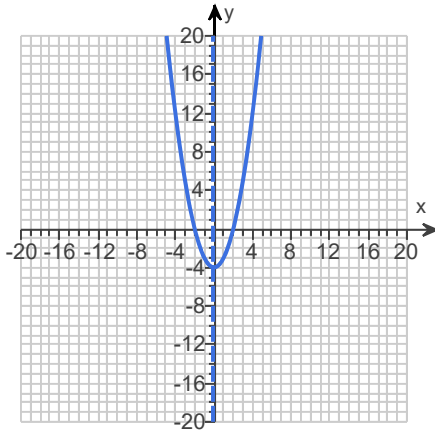
92. $\dfrac{3}{2}, \dfrac{1}{2}$

93. 2

94. $\dfrac{3 - \sqrt{21}}{2}, \dfrac{3 + \sqrt{21}}{2}$

95. $\dfrac{-1 - \sqrt{91}}{10}, \dfrac{-1 + \sqrt{91}}{10}$

96. $-2 + 5i, -2 - 5i$

97.

(0, − 4)

x = 0

98. (− 1, − 1)

99. 26.6

100. 7229.89

101. 14,075.49