Student: _____	**Instructor:** Alfredo Alvarez	**Assignment:** Math 0320 Homework57
Date: _____	**Course:** Math 0320 Spring 2018	

1. Solve the inequality.

    $3x - 6 < 7x + 2$

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

2. Find h(− 5), h(0), and h(2) for the following function.

    $h(x) = 5x^2 - 1$

    h(− 5) = [_____] (Simplify your answer.)

    h(0) = [_____] (Simplify your answer.)

    h(2) = [_____] (Simplify your answer.)

3. Determine whether each ordered pair is a solution of the system of linear equations.

    $$\begin{cases} x + y = 5 \\ 2x + 3y = 13 \end{cases}$$

    a. (2,3)
    b. (3,2)

    a. Is (2,3) a solution?

    ○ No
    ○ Yes

    b. Is (3,2) a solution?

    ○ Yes
    ○ No

4. Solve the system of equations by the addition method.

    $$\begin{cases} 5x + 4y = 33 \\ 2x - 4y = 2 \end{cases}$$

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

    ○ **A.** The solution is _____ . (Simplify your answer. Type an ordered pair.)
    ○ **B.** There are infinitely many solutions; {(x,y)|5x + 4y = 33} or {(x,y)|2x − 4y = 2}.
    ○ **C.** There is no solution; {} or ∅.

5. Solve the system of equations by the addition method.

$$\begin{cases} x + 2y = 2 \\ 5x + 3y = -4 \end{cases}$$

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

○ **A.** The solution is _____ . (Simplify your answer. Type an ordered pair.)

○ **B.** There are infinitely many solutions; $\{(x,y)|x + 2y = 2\}$ or $\{(x,y)|5x + 3y = -4\}$.

○ **C.** There is no solution; $\{\}$ or $\varnothing$.

6. Divide using synthetic division.

$$\left(7x^2 + 13x + 10\right) \div (x + 1)$$

$\left(7x^2 + 13x + 10\right) \div (x + 1) = \boxed{}$

7. Factor out the greatest common factor from the polynomial.

$$4x + 20$$

$4x + 20 = \boxed{}$ (Type your answer in factored form.)

8. Factor the four-term polynomial by grouping.

$$6x^2 - 12xy - 7x + 14y$$

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

○ **A.** $6x^2 - 12xy - 7x + 14y = \underline{}$

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

9. Factor the following polynomial.

$$-42x^2y^6 - 18x^3y^3$$

$-42x^2y^6 - 18x^3y^3 = \boxed{}$ (Factor completely.)

10. Factor the following binomial completely.

$$196x^2 - 169y^2$$

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

○ **A.** $196x^2 - 169y^2 = \underline{}$ (Factor completely.)

○ **B.** The polynomial is prime.

11. Solve.

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

x = [＿＿＿＿＿]

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

12. Solve.

$$x^2 - 8x = 0$$

x = [＿＿＿＿＿]

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

13. Solve the equation.

$$x^2 - 5x = 36$$

x = [＿＿＿＿＿]

(Use a comma to separate answers as needed.)

14. Solve the equation.

$$x^3 - 11x^2 + 18x = 0$$

x = [＿＿＿＿＿]

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

15. Solve the equation.

$$16x^3 - x = 0$$

x = [＿＿＿＿＿]

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

16. Solve the equation.

$$48x^3 - 18x^2 - 3x = 0$$

x = [＿＿＿＿＿]

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

17. Solve.

$$x^2 - 8 = -2x$$

x = [＿＿＿＿＿]

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

18. Solve.

$$2x^2 - 13x - 45 = 0$$

x = [＿＿＿＿＿]

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

19. Simplify the expression.

$$\frac{2}{6a - 4}$$

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

○ **A.** $\frac{2}{6a - 4}$ = _____ (Simplify your answer.)

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

20. Simplify the expression.

$$\frac{-4x + 4y}{x - y}$$

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

○ **A.** $\frac{-4x + 4y}{x - y}$ = _____ (Simplify your answer.)

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

21. Find the function value.

If $f(x) = \frac{x + 8}{2x - 1}$, find f(6), f(0), and f(−1).

f(6) = [_____] (Type an integer or a simplified fraction.)

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

f(−1) = [_____] (Type an integer or a simplified fraction.)

22. Find the product and simplify if possible.

$$\frac{x}{2x - 16} \cdot \frac{x^2 - 8x}{2}$$

$\frac{x}{2x - 16} \cdot \frac{x^2 - 8x}{2}$ = [_____]

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

23. Find the quotient and simplify.

$$\frac{m^2 - n^2}{m + n} \div \frac{m}{m^2 + nm}$$

$\frac{m^2 - n^2}{m + n} \div \frac{m}{m^2 + nm}$ = [_____] (Simplify your answer.)

24. Find the quotient and simplify.

$$\frac{x^2 + 8x + 7}{x - 2} \div \frac{x^2 - 2x - 3}{x - 2}$$

$\frac{x^2 + 8x + 7}{x - 2} \div \frac{x^2 - 2x - 3}{x - 2} =$ ☐   (Type your answer in factored form.)

25. Add. Simplify the result if possible.

$$\frac{6}{3 + y} + \frac{y + 5}{3 + y}$$

$\frac{6}{3 + y} + \frac{y + 5}{3 + y} =$ ☐   (Simplify your answer.)

26. Subtract. Simplify the result if possible.

$$\frac{3x^2 + 16x}{x - 1} - \frac{8x + 11}{x - 1}$$

$\frac{3x^2 + 16x}{x - 1} - \frac{8x + 11}{x - 1} =$ ☐   (Simplify your answer.)

27. Subtract the rational expressions.

$$\frac{7x + 12}{x^2 + 7x + 10} - \frac{6x + 7}{x^2 + 7x + 10}$$

$\frac{7x + 12}{x^2 + 7x + 10} - \frac{6x + 7}{x^2 + 7x + 10} =$ ☐   (Simplify your answer.)

28.
Graph the linear equation.
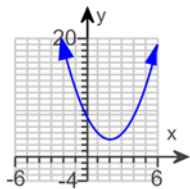
$$f(x) = -2x + 5$$

Use the graphing tool to graph the linear equation.
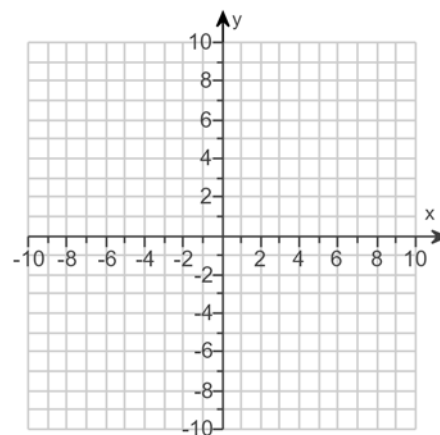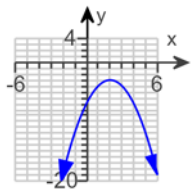
29. Graph $y = x^2 - 4x + 7$. Let $x = 0, 1, 2, 3, 4$ to generate ordered pair solutions.
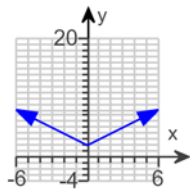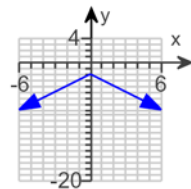
Choose the correct graph below.

A.   B.   C.   D.

---

30. Solve the compound inequality.

$$-13 \leq 3x - 10 \leq 11$$

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 $\varnothing$.

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31. Solve the absolute value equation.

$$|2x - 1| = 3$$

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.)
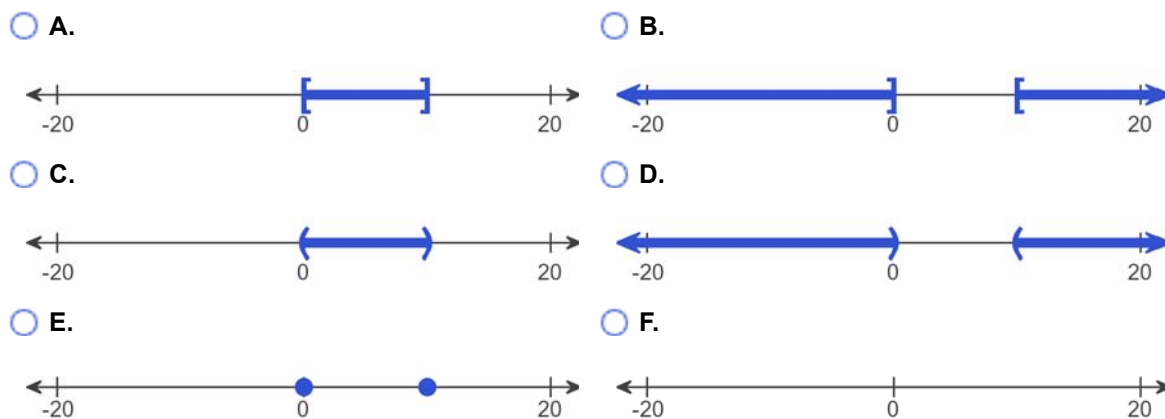
B. The solution set is $\varnothing$.

32. Solve the inequality. Then graph the solution set.

$$|x - 5| < 5$$

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.**

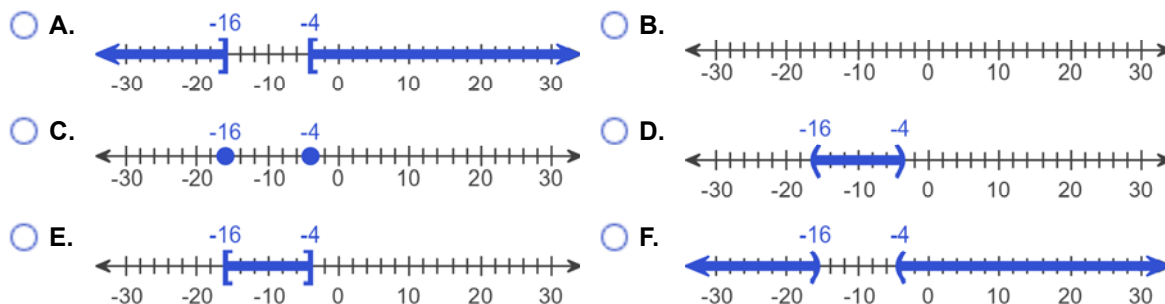○ **D.**

○ **E.**

○ **F.**

33. Solve the inequality. Graph the solution set.

$$|x + 10| \geq 6$$

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.**

○ **B.**

○ **C.**

○ **D.**

○ **E.**

○ **F.**

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

$$\sqrt{49a^8b^{40}}$$

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

  ◯ **A.** $\sqrt{49a^8b^{40}}$ = _____

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

---

35. 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.

---

36. If $f(x) = \sqrt{5x+7}$, find f(2).

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

---

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

$$1024^{2/5}$$

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

  ◯ **A.** $1024^{2/5}$ = _____
       (Simplify your answer. Type an exact answer, using radicals as needed.)

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

38.
Simplify by factoring.

$$\sqrt{12}$$

$\sqrt{12}$ = [_____]
(Type an exact answer, using radicals as needed.)

39.
Express in simplified form.

$$\sqrt[3]{375}$$

$\sqrt[3]{375}$ = [_____] • $\sqrt[3]{[\quad\quad]}$

---

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

$$\sqrt{121x^5}$$

$\sqrt{121x^5}$ = [_____] (Type an exact answer, using radicals as needed.)

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

$$\sqrt[3]{256x^8}$$

$\sqrt[3]{256x^8}$ = [ ]

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

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

$$\sqrt{121a^2b^5}$$

$\sqrt{121a^2b^5}$ = [ ] (Type an exact answer, using radicals as needed.)

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

$$\sqrt[3]{81x^6y^4}$$

$\sqrt[3]{81x^6y^4}$ = [ ]

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

44. Solve.

$$\sqrt{x-1} = 6$$

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 ∅.

45. Add.

$$(9 - 9i) + (3 + 7i)$$

$(9 - 9i) + (3 + 7i)$ = [ ]
(Simplify your answer. Type your answer in the form a + bi.)

46. Subtract.

$$(6 + 7i) - (8 - 9i)$$

$(6 + 7i) - (8 - 9i)$ = [ ]
(Simplify your answer. Type your answer in the form a + bi.)

47. Multiply.

$$(4 + 4i)(5 + i)$$

$(4 + 4i)(5 + i)$ = [ ]
(Simplify your answer. Type your answer in the form a + bi.)

48. Perform the indicated operation.

$$\frac{8 - 7i}{8 + i}$$

$\dfrac{8 - 7i}{8 + i} = \boxed{}$

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

---

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

$$(x + 6)^2 = 9$$

$x = \boxed{}$

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

---

50. Use the quadratic formula to solve the equation.

$$m^2 + 5m - 6 = 0$$

$m = \boxed{}$

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

---

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

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

$y = \boxed{}$

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

---

52. Use the quadratic formula to solve the equation.

$$x^2 + 10x + 25 = 0$$

$x = \boxed{}$

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

---

53. Use the quadratic formula to solve the equation.

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

$x = \boxed{}$

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

---

54. Use the quadratic formula to solve the equation.

$$x^2 + 2x + 26 = 0$$

The solution(s) is/are x = $\boxed{}$.

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

55.

Sketch the graph of the quadratic function and the axis of symmetry. State the vertex, and give the equation for the axis of symmetry.
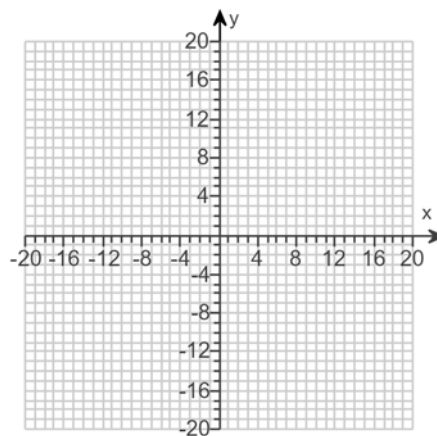
$f(x) = x^2 - 7$

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.)

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

$f(x) = -4x^2 - 8x + 8$

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

57. Find the total amount a college student has in a savings account if $3,000 was invested and earned 6% compounded quarterly for 10 years. Use $A = P\left(1 + \dfrac{r}{n}\right)^{nt}$.

The amount after 10 years will be $[   ].
(Do not round until the final answer. Then round to the nearest cent as needed.)

1. $(-2,\infty)$

2. 124

   -1

   19

3. Yes

   No

4. A. The solution is ⟨ **(5,2)** ⟩. (Simplify your answer. Type an ordered pair.)

5. A. The solution is ⟨ **(−2,2)** ⟩. (Simplify your answer. Type an ordered pair.)

6. $7x + 6 + \dfrac{4}{x+1}$

7. $4(x+5)$

8. A. $6x^2 - 12xy - 7x + 14y =$ ⟨ **(6x − 7)(x − 2y)** ⟩

9. $6x^2y^3\left(-7y^3 - 3x\right)$

10. A. $196x^2 - 169y^2 =$ ⟨ **(14x + 13y)(14x − 13y)** ⟩ (Factor completely.)

11. $-4, 2$

12. $0, 8$

13. $9, -4$

14. $0, 2, 9$

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

16. $0, \dfrac{1}{2}, -\dfrac{1}{8}$

---

17. $-4, 2$

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18. $-\dfrac{5}{2}, 9$

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19. A. $\dfrac{2}{6a-4} = \boxed{\mathbf{\dfrac{1}{3a-2}}}$ (Simplify your answer.)

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20. A. $\dfrac{-4x+4y}{x-y} = \boxed{\mathbf{-4}}$ (Simplify your answer.)

---

21. $\dfrac{14}{11}$

-8

$-\dfrac{7}{3}$

---

22. $\dfrac{x^2}{4}$

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23. $m^2 - n^2$

---

24. $\dfrac{x+7}{x-3}$

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25. $\dfrac{y+11}{3+y}$

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26. $3x + 11$

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27. $\dfrac{1}{x+2}$

28.
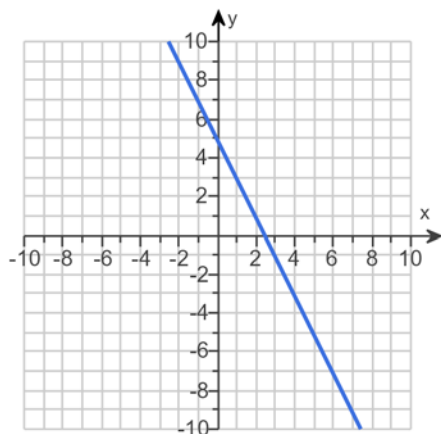
29.
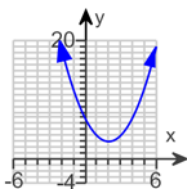
A.

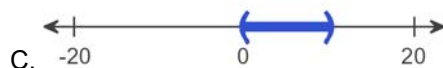30. A. The solution set is $\boxed{\ \ [-1,7]\ \ }$.

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

31. A. The solution set is $\left\{\ \boxed{\ \ 2,-1\ \ }\ \right\}$.

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

32. A. The solution is one or more intervals. The solution is $\boxed{\ \ (0,10)\ \ }$.

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

C.

33. A. The solution is one or more intervals. The solution is $\boxed{(-\infty,-16] \cup [-4,\infty)}$.

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

A.
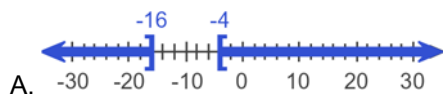
34. A. $\sqrt{49a^8 b^{40}} = \boxed{\ \ 7a^4 b^{20}\ \ }$

35. A. $\sqrt[3]{-64x^{12}y^9} = \boxed{\ \ -4x^4 y^3\ \ }$

36. $\sqrt{17}$

37. A. $1024^{2/5} = \boxed{\qquad 16 \qquad}$ (Simplify your answer. Type an exact answer, using radicals as needed.)

38. $2\sqrt{3}$

39. 5

    3

40. $11x^2\sqrt{x}$

41. $4x^2\sqrt[3]{4x^2}$

42. $11ab^2\sqrt{b}$

43. $3x^2y\sqrt[3]{3y}$

44. A. The solution(s) is(are) x = $\boxed{\qquad 37 \qquad}$. (Use a comma to separate answers as needed.)

45. $12 - 2\,i$

46. $-2 + 16\,i$

47. $16 + 24\,i$

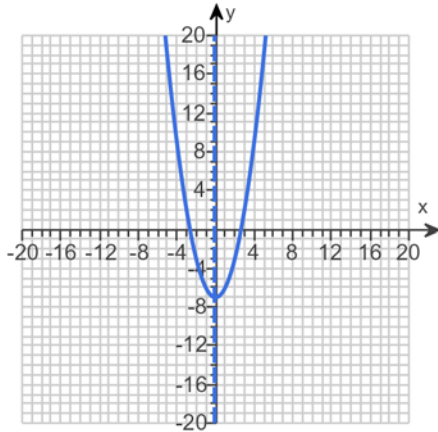48. $\dfrac{57}{65} - \dfrac{64}{65}\,i$

49. $-3, -9$

50. $-6, 1$

51. $1, -\dfrac{4}{3}$

52. -5

---

53. $\dfrac{-1 - \sqrt{21}}{2}, \dfrac{-1 + \sqrt{21}}{2}$

---

54. $-1 + 5i, -1 - 5i$

55.

$(0, -7)$

$x = 0$

---

56. $(-1, 12)$

---

57. 5,442.06