1.  Solve the logarithmic equation. Be sure to reject any value of x that is not in the domain of the original logarithmic expression.

$$\log_{16} x = \frac{1}{4}$$

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

○A.  The solution set is $\{\ \blacksquare\ \}$.
(Type an exact answer in simplified form.)

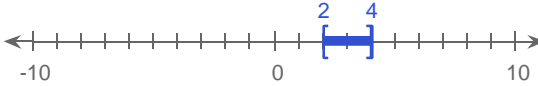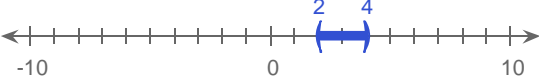○B.  There is no solution.

ID: 12.4.45

2.  Solve and graph the solution set on a number line.

$$|x - 3| \geq 1$$

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

○A.  The solution set is $\blacksquare$. (Type your answer in interval notation.)

○B.  The solution set is ∅.

Choose the correct graph below.

○A.


○B.


○C.


○D.  The graph contains no points.

ID: 9.3.51

3. Solve the rational equation. If the equation has no solution, so state.

$$\frac{3y}{y+2} = 6 - \frac{6}{y+2}$$

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

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

○B. There is no solution.

ID: 7.6.31

4. Perform the indicated operations. Assume that all variables represent positive real numbers.

$$4x\sqrt{18xy} - \frac{\sqrt{108x^2y^5}}{\sqrt{6x^{-1}y^4}}$$

$$4x\sqrt{18xy} - \frac{\sqrt{108x^2y^5}}{\sqrt{6x^{-1}y^4}} = \boxed{\phantom{x}}$$

(Simplify your answer. Type an exact answer, using radicals as needed.)
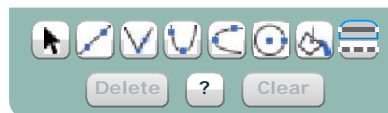
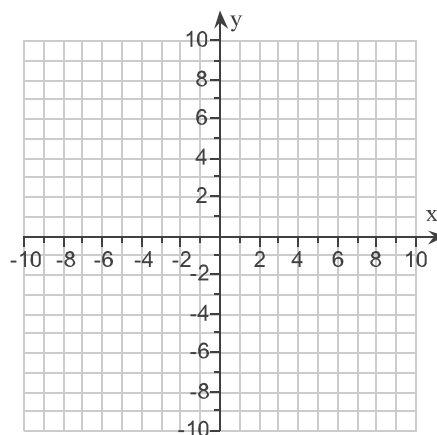ID: 10.4.73

5. Use the vertex and intercepts to sketch the graph of following quadratic function. Use the graph to identify the function's range.

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

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

Click to enlarge graph

The range of f is $\boxed{\phantom{x}}$.
(Type your answer in interval notation.)

ID: 11.3.27

6. Write the following equation in its equivalent exponential form.

$$\log_4 64 = y$$

The exponential form is $\boxed{\phantom{x}}$.

ID: 12.2.7

7. Use the product rule to multiply.

$$\sqrt{\dfrac{6x}{5}} \cdot \sqrt{\dfrac{5}{6}}$$

$\sqrt{\dfrac{6x}{5}} \cdot \sqrt{\dfrac{5}{6}} = \boxed{\phantom{x}}$

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

ID: 10.3.15

8.  A person standing close to the edge on the top of a 170-foot building throws a baseball vertically upward. The quadratic function given below models the ball's height above the ground, s(t), in feet, t seconds after it was thrown. Complete parts (a) through (d).

$$s(t) = -16t^2 + 96t + 170$$

**a.** After how many seconds does the ball reach its maximum height? What is the maximum height?

The ball reaches its maximum height of ☐ feet after ☐ seconds.

**b.** How many seconds does it take until the ball finally hits the ground?

It will take ☐ seconds for the ball to hit the ground.
(Round to one decimal place as needed.)

**c.** Find s(0) and describe what this means.

The value of s(0) is ☐, which is
| the maximum height of the ball |
| the minimum height of the ball |
| the height of the building |
.

**d.** Use your results from parts (a) through (c) to graph the quadratic function. Begin the graph with t = 0 and end with the value of t for which the ball hits the ground. Choose the correct graph below.
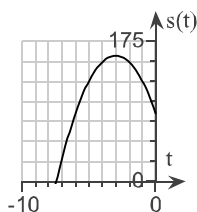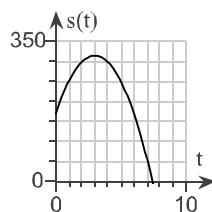
○A. ○B. ○C. ○D.



ID: 11.3.57

9.  Divide as indicated.

$$\frac{x^2 - 64y^2}{x^2 - 9xy + 8y^2} \div \frac{x^2 + 16xy + 64y^2}{x - y}$$

$$\frac{x^2 - 64y^2}{x^2 - 9xy + 8y^2} \div \frac{x^2 + 16xy + 64y^2}{x - y} = \boxed{\phantom{xx}} \text{ (Simplify your answer.)}$$

ID: 7.2.64

10. Subtract.

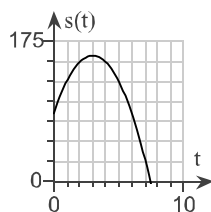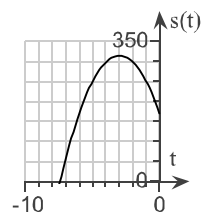$$\frac{x}{x^2 - 3x - 18} - \frac{x}{x^2 - 8x + 12}$$

$\dfrac{x}{x^2 - 3x - 18} - \dfrac{x}{x^2 - 8x + 12} = \boxed{\phantom{x}}$ (Simplify your answer.)

ID: 7.4.54

11. Solve the following logarithmic equation. Be sure to reject any value of x that is not in the domain of the original logarithmic expression. Give the exact answer.

$$\log_2(6x + 3) = 5$$

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

○ A. The solution set is { ▇ }.
  (Simplify your answer.)

○ B. There is no solution.

ID: 12.4.53

12. Solve the rational equation. If the equation has no solution, so state.

$$\frac{5}{x} + \frac{1}{4} = \frac{9}{x}$$

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

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

○ B. There is no solution.

ID: 7.6.7

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**Time:** _____

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**Course:** MATH 64/Summer 2013
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**Assignment:** Practice Final

13.     For the pair of functions, f and g, determine the domain of f + g.

$$f(x) = \frac{1}{x - 4}, \, g(x) = \frac{2}{x - 11}$$

Determine the domain of f + g. Choose the correct answer below.

   A.  $(-\infty, 4)$ or $(4, 11)$ or $(11, \infty)$

   B.  $(-\infty, 11)$ or $(11, \infty)$

   C.  $(-\infty, 4)$ or $(11, \infty)$

   D.  $(-\infty, \infty)$

   ID: 8.3.23

14.     Use common logarithms or natural logarithms and a calculator to evaluate to four decimal places.

   $$\log_{\pi} 68$$

   $\log_{\pi} 68 \approx \boxed{\phantom{0}}$
   (Round the final answer to four decimal places as needed. Round all intermediate values to five decimal places as needed.)

   ID: 12.3.67

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

   $$\frac{1}{x^2 + 4x - 5} = \frac{1}{x - 5} + \frac{3}{x^2 - 25}$$

   The solution set is $\{\boxed{\phantom{0}}\}$.
   (Type an exact answer, using radicals as needed. Use a comma to separate answers as needed.)

   ID: 11.2.71

16.     Write the equation in its equivalent exponential form.

   $$5 = \log_2 M$$

   What is the equivalent exponential form of the equation?

   $\boxed{\phantom{000}}$

   ID: 12.2.3

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17. Add.

$$\frac{x}{x-2} + \frac{2x+3}{x-2}$$

$\dfrac{x}{x-2} + \dfrac{2x+3}{x-2} = \boxed{\phantom{x}}$ (Simplify your answer.)

ID: 7.3.13

18. An island has 12 fur seal rookeries (breeding places). To estimate the fur seal pup population in Rookery A, 5814 fur seal pups were tagged in early August. In late August, a sample of 500 pups was observed, and 191 of these were found to have been previously tagged. Use a proportion to estimate the total number of fur seal pups in Rookery A.

The estimated total number of fur seal pups in Rookery A is $\boxed{\phantom{x}}$.
(Round to the nearest whole number.)

ID: 7.7.19

19. Find the product.

$(8-6i)(7-2i)$

$(8-6i)(7-2i) = \boxed{\phantom{x}}$
(Simplify your answer. Type your answer in the form $a+bi$.)

ID: 10.7.41

20. Solve the equation using the quadratic formula.

$2x(x-2) = -x+9$

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

ID: 11.2.17

21. Solve the radical equation.

$$\sqrt{20x + 1} = x + 1$$

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

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

ID: 10.6.9

22. Simplify the rational expression. If the rational expression cannot be simplified, so state.

$$\frac{x^2 + 3xy - 4y^2}{3x^2 + 11xy - 4y^2}$$

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

  ○ A. $\dfrac{x^2 + 3xy - 4y^2}{3x^2 + 11xy - 4y^2} = $ ▪
  ○ B. The expression cannot be simplified.

ID: 7.1.75

23. Solve the radical equation.

$$\sqrt{6x - 1} = \sqrt{5x + 5}$$

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

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

ID: 10.6.15

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**Assignment:** Practice Final

24. Evaluate the expression without using a calculator.

$$\log_3 243$$

$\log_3 243 = \boxed{\phantom{xx}}$

ID: 12.2.23

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

$$f(x) = 4x^2 + 16x + 6$$

The vertex is $\boxed{\phantom{xx}}$. (Type an ordered pair.)

ID: 11.3.13

26. Evaluate the expression without using a calculator.

$$\log_6 (\log_2 64)$$

$\log_6 (\log_2 64) = \boxed{\phantom{xx}}$

ID: 12.2.79

27. Write a quadratic equation in standard form with the given solution set.

$$\left\{ -3\sqrt{2}, 3\sqrt{2} \right\}$$

$\boxed{\phantom{xx}} = 0$

(Type an equation whose terms have 1 as their greatest common factor.)

ID: 11.2.57

28. Use the graph of f to find the indicated function value.

$$f(-2)$$

$f(-2) = \boxed{\phantom{x}}$
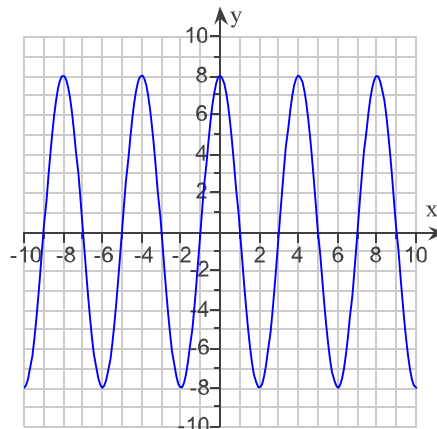


ID: 8.2.9

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29. Use properties of logarithms to condense the logarithmic expression. Write the expression as a single logarithm whose coefficient is 1. Where possible, evaluate logarithmic expressions.

$$\ln x + \ln 11$$

$\ln x + \ln 11 = \boxed{\phantom{x}}$

ID: 12.3.39

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30. Add or subtract as indicated. You will need to simplify terms to identify the like radicals.

$$7\sqrt[3]{500} + \sqrt[3]{32}$$

$7\sqrt[3]{500} + \sqrt[3]{32} = \boxed{\phantom{x}}$

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

ID: 10.4.17

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31. Add.

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

$\dfrac{3}{y+2} + \dfrac{2}{3y} = \boxed{\phantom{x}}$ (Simplify your answer.)

ID: 7.4.33

32.      Evaluate the expression without using a calculator.

$$10^{\log 8}$$

$10^{\log 8} = \boxed{\phantom{x}}$

ID: 12.2.57

33.      Write $e^{\ln 8x^5 - \ln 4x^2}$ as a single term that does not contain a logarithm.

$e^{\ln 8x^5 - \ln 4x^2} = \boxed{\phantom{x}}$ (Simplify your answer.)

ID: 12.3.121

34.      Rationalize the denominator.

$$\frac{9}{\sqrt[3]{x}}$$

$\frac{9}{\sqrt[3]{x}} = \boxed{\phantom{x}}$

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

ID: 10.5.59

35.      Solve the exponential equation. Express the solution in terms of natural logarithms. Then use a calculator to obtain a decimal approximation for the solution.

$$2^{(x-1)} = 210$$

What is the solution in terms of natural logarithms?

The solution set is $\{\boxed{\phantom{x}}\}$.
(Use a comma to separate answers as needed. Simplify your answer. Use integers or fractions for any numbers in the expression.)

What is the decimal approximation for the solution?

The solution set is $\{\boxed{\phantom{x}}\}$.
(Use a comma to separate answers as needed. Round to two decimal places as needed.)

ID: 12.4.37

36. Divide and simplify.

$$\frac{5}{2i}$$

$\frac{5}{2i} = \boxed{\phantom{x}}$

(Type an integer or a fraction. Type the answer in the form $a + bi$.)

ID: 10.7.79

37. Simplify the complex rational expression.

$$\frac{\dfrac{1}{1 - \dfrac{7}{x}} - 1}{}$$

$\dfrac{1}{1 - \dfrac{7}{x}} - 1 = \boxed{\phantom{x}}$

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

ID: 7.5.45

38. Simplify the complex rational expression.

$$\frac{2 + \dfrac{1}{x}}{5 - \dfrac{1}{x}}$$

$\dfrac{2 + \dfrac{1}{x}}{5 - \dfrac{1}{x}} = \boxed{\phantom{x}}$ (Type the answer in factored form.)
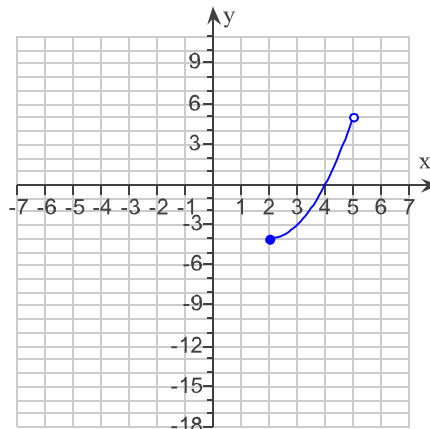
ID: 7.5.11

39. Use the graph of the function to identify its domain and its range.

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

○ A. The domain contains infinitely many points. The domain in interval notation is ☐ .

○ B. The domain can be described by a list of numbers. The domain is $\{x \mid x = $ ☐ $\}$.
(Use a comma to separate answers as needed.)

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

○ A. The range contains infinitely many points. The range in interval notation is ☐ .

○ B. The range can be described by a list of numbers. The range is $\{y \mid y = $ ☐ $\}$.
(Use a comma to separate answers as needed.)

ID: 8.2.35

40. Solve the following exponential equation by taking the logarithm on both sides. Express the solution set in terms of logarithms. Then use a calculator to obtain a decimal approximation, correct to two decimal places, for the solution.

$$2^x = 27$$

What is the solution in terms of logarithms?

The solution set is { ☐ }.
(Type an exact answer in simplified form.)

What is the decimal approximation for the solution?

The solution set is { ☐ }.
(Round to two decimal places as needed.)

ID: 12.4.23

41.      Rationalize the denominator.

$$\frac{\sqrt{2}}{\sqrt{13}}$$

$\dfrac{\sqrt{2}}{\sqrt{13}} = \boxed{\phantom{xx}}$ (Simplify your answer.)

ID: 10.5.39

42.      Use properties of logarithms to expand the logarithmic expression below as much as possible. Where possible, evaluate logarithmic expressions without using a calculator.

$$\log{(1{,}000{,}000{,}000x)}$$

$\log{(1{,}000{,}000{,}000x)} = \boxed{\phantom{xx}}$ (Simplify your answer.)

ID: 12.3.5

43.      Find the product.

$$\sqrt{-7} \cdot \sqrt{-81}$$

$\sqrt{-7} \cdot \sqrt{-81} = \boxed{\phantom{xx}}$

(Simplify your answer. Type an exact answer, using radicals as needed.)
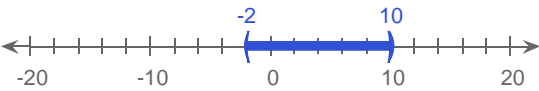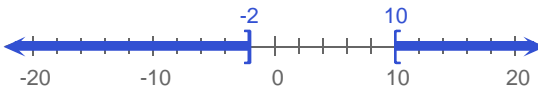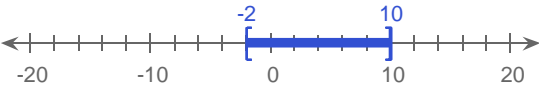
ID: 10.7.59

44.    Solve and graph the solution set on a number line.

$$|x - 4| < 6$$

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

- A. The solution is ▯ .
  (Type your answer in interval notation. Simplify your answer. Use integers or fractions for any numbers in the expression.)
- B. The solution is ∅.

Choose the correct graph below.

- A. 
- B. 
- C. 
- D. The graph contains no points.

ID: 9.3.41

45.    A truck can travel 245 miles in the same time that it takes a car to travel 350 miles. If the truck's rate is 15 miles per hour slower than the car's, find the average rate for each.

The rate of the car is ▭ miles per hour.

The rate of the truck is ▭ miles per hour.

ID: 7.7.4

46.    Solve the logarithmic equation. Be sure to reject any value of x that is not in the domain of the original logarithmic expressions. Give the exact answer.

$$\ln (x - 4) + \ln (x + 3) = \ln (x - 13)$$

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

- A. The solution set is { ▯ } .
  (Simplify your answer. Use a comma to separate answers as needed.)
- B. There is no solution.

ID: 12.4.89

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47.     Simplify the complex rational expression by the method of your choice.

$$\frac{\dfrac{1}{x-9}}{1-\dfrac{1}{x-9}}$$

$$\frac{\dfrac{1}{x-9}}{1-\dfrac{1}{x-9}} = \boxed{\phantom{x}} \quad \text{(Type your answer in factored form.)}$$

ID: 7.5.34

48.     Find the midpoint of the line segment with endpoints $(-7, -6)$ and $(-3, -9)$.

The midpoint of the line segment is $\boxed{\phantom{x}}$.
(Type an ordered pair.)

ID: 11.1.83

49.     Solve the following exponential equation by taking the logarithm on both sides. Express the solution set in terms of logarithms. Then use a calculator to obtain a decimal approximation, correct to two decimal places, for the solution.

$$6e^{9x} = 1860$$

What is the solution in terms of logarithms?

The solution set is $\{\boxed{\phantom{x}}\}$.
(Type an exact answer in simplified form.)

What is the decimal approximation for the solution?

The solution set is $\{\boxed{\phantom{x}}\}$.
(Round to two decimal places as needed.)

ID: 12.4.27

50. Solve the radical equation.

$$\sqrt{x - 33} = 11 - \sqrt{x}$$

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

- ○A. The solution set is { ▢ }.
  (Type an exact answer, using radicals as needed. Use a comma to separate answers as needed.)
- ○B. The solution is the empty set.

ID: 10.6.21

51. A pool can be filled by one pipe in 7 hours and by a second pipe in 8 hours. How long will it take using both pipes to fill the pool?

It will take about ▢ hours to fill the pool using both pipes.
(Type an integer or decimal rounded to the nearest tenth.)

ID: 7.7.15

52. Determine whether the relation is a function. Give the domain and the range of the relation.

{(2,4),(2,5),(5,4),(5,5)}

Is this a function?

- ○ No
- ○ Yes

The domain is { ▢ }.
(Use commas to separate answers.)

The range is { ▢ }.
(Use commas to separate answers.)

ID: 8.1.3

53. Solve the following rational equation.

$$\frac{6}{x^2 - 16} = \frac{5}{x + 4}$$

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

- A. The solution set is {█}.
  (Simplify your answer. Use a comma to separate answers as needed.)
- B. The solution is the empty set.

ID: 7.6.27

54. The function $f(x) = \dfrac{16}{x}$ is one-to-one.

Find an equation for $f^{-1}(x)$, the inverse function.

$f^{-1}(x) = \boxed{\phantom{xx}}$

(Type an expression for the inverse. Use integers or fractions for any number in the expression.)

ID: 8.4.31

55. Write the equation in its equivalent logarithmic form.

$$a^2 = 987$$

What is the equivalent logarithmic form of the equation?

$\boxed{\phantom{xx}}$

ID: 12.2.17

56. Solve the equation by making an appropriate substitution. If at any point in the solution process both sides of an equation are raised to an even power, a check is required.

$$x^4 + 34x^2 = 72$$

The solution set is {$\boxed{\phantom{x}}$}.

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

ID: 11.4.5

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**Assignment:** Practice Final

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

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

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

ID: 11.2.39

58. Solve the following equation using the quadratic formula.

$$2x^2 - 11x = 6$$

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

ID: 11.2.3

59. Find the solution set for the equation.

$$|3x - 2| + 10 = 23$$

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

○A. The solution set is $\{\boxed{\phantom{x}}\}$.
(Simplify your answer. Use a comma to separate answers as needed.)

○B. The solution set is all real numbers.

○C. The solution set is $\varnothing$.

ID: 9.3.17

60. Solve the equation for M.

$$f = -\frac{GMn}{r^2}$$

The answer is $M = \boxed{\phantom{x}}$.

ID: 7.6.53

61.  Rationalize the denominator. Simplify, if possible.

$$\frac{5}{\sqrt{5}+2}$$

$\dfrac{5}{\sqrt{5}+2} = \boxed{\phantom{xx}}$  (Type an exact answer, using radicals as needed.)

ID: 10.5.75

62.  Find the distance between the pair of points.

$(6,3)$ and $(18,12)$

The distance between the points is $\boxed{\phantom{x}}$ units.
(Round to two decimal places as needed.)

ID: 11.1.63

63.  Solve the logarithmic equation.  Be sure to reject any value of x that is not in the domain of the original logarithmic expressions.  Give the exact answer.

$\log(x+5) = \log x + \log 5$

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

○ A.  The solution set is $\{\,\blacksquare\,\}$.
 (Simplify your answer.  Use a comma to separate answers as needed.)

○ B.  There is no solution.

ID: 12.4.77

64.  Find the indicated function values for the function below.

$$h(x) = 6x^2 - 5$$

**a.** $h(0)$      **b.** $h(-1)$      **c.** $h(2)$      **d.** $h(-5)$      **e.** $h(8b)$

**a.** $h(0) = \boxed{\phantom{x}}$ (Simplify your answer.)

**b.** $h(-1) = \boxed{\phantom{x}}$ (Simplify your answer.)

**c.** $h(2) = \boxed{\phantom{x}}$ (Simplify your answer.)

**d.** $h(-5) = \boxed{\phantom{x}}$ (Simplify your answer.)

**e.** $h(8b) = \boxed{\phantom{x}}$ (Simplify your answer.)

ID: 8.1.13

65.  Add or subtract as indicated. Simplify the result, if possible.

$$\frac{y+2}{6y^2} - \frac{y-1}{12y}$$

$$\frac{y+2}{6y^2} - \frac{y-1}{12y} = \boxed{\phantom{x}}$$

ID: 7.4.73

66.  Use properties of rational exponents to simplify the expression. Assume that all variables represent positive numbers.

$$\frac{(5y^{1/4})^3}{y^{1/12}}$$

$$\frac{(5y^{1/4})^3}{y^{1/12}} = \boxed{\phantom{x}}$$

(Use integers or fractions for any numbers in the expression. Type exponential notation with positive exponents.)

ID: 10.2.77

67. Use properties of logarithms to expand the logarithmic expression as much as possible. Evaluate logarithmic expressions without using a calculator if possible.

$$\ln\left(\frac{e^7}{2}\right)$$

$\ln\left(\dfrac{e^7}{2}\right) = \boxed{\phantom{xx}}$

ID: 12.3.13

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

$$\frac{11}{5x - 15}$$

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

○ A. The function is undefined for $x = \boxed{\phantom{xx}}$.
(Use a comma to separate answers as needed.)

○ B. The rational expression is defined for all real numbers.

ID: 7.1.5

69. Solve the equation by the square root property.

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

The solution set is $\{\boxed{\phantom{x}}\}$.
(Type an exact answer, using radicals as needed. Type your answer in the form a + b$i$. Rationalize all denominators. Use a comma to separate answers as needed. Simplify your answer.)

ID: 11.1.7

70. Solve the following equation by the method of your choice. Simplify solutions, if possible.

$$5x^2 = -x - 9$$

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

ID: 11.2.35

**71.** Evaluate the following expression without using a calculator.

$$\log_6 6$$

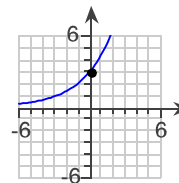$\log_6 6 = \boxed{\phantom{x}}$

ID: 12.2.35

**72.** Evaluate the expression without using a calculator.

$$\log_2 \frac{1}{16}$$

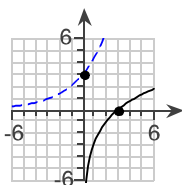$\log_2 \frac{1}{16} = \boxed{\phantom{x}}$

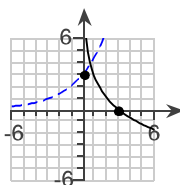ID: 12.2.27

**73.** Use the graph of f to draw the graph of its inverse function.



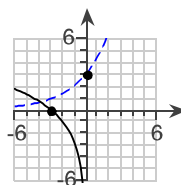Choose the correct graph of the inverse function $f^{-1}$ below. The graph of f is dashed in each of the choices.
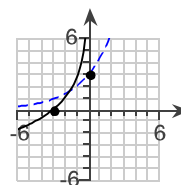
○A.



○B.



○C.



○D.



ID: 8.4.43

74. The function $f(x) = x + 7$ is one-to-one.

Find an equation for $f^{-1}(x)$, the inverse function.

$f^{-1}(x) = \boxed{\phantom{x}}$

(Type an expression for the inverse. Use integers or fractions for any numbers in the expression.)

ID: 8.4.25

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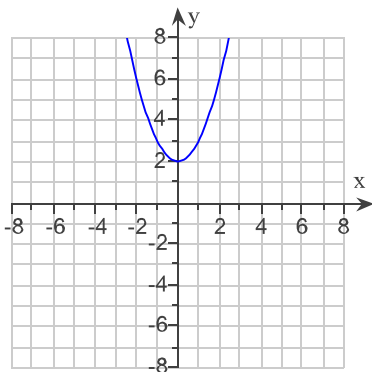


Choose the correct equation below.

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

ID: 11.3.5

---

76. For $f(x) = 2x - 7$ and $g(x) = \dfrac{x + 7}{2}$ find

a. $(f \circ g)(x);$   b. $(g \circ f)(x);$   c. $(f \circ g)(6)$

a. $(f \circ g)(x) = \boxed{\phantom{x}}$
(Simplify your answer.)

b. $(g \circ f)(x) = \boxed{\phantom{x}}$
(Simplify your answer.)

c. $(f \circ g)(6) = \boxed{\phantom{x}}$

ID: 8.4.11

77.  Multiply as indicated. If possible, simplify any radical expressions that appear in the product.

$$\left(6+\sqrt{5}\right)\left(2-4\sqrt{5}\right)$$

$\left(6+\sqrt{5}\right)\left(2-4\sqrt{5}\right) = \boxed{\phantom{xx}}$

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

ID: 10.5.13

78.  Simplify the expression.

$$\left(-i\right)^{15}$$

$\left(-i\right)^{15} = \boxed{\phantom{xx}}$

ID: 10.7.97

79.  Find the domain of the function.

$$f(x) = \frac{29x}{x-10}$$

Determine the domain of f(x). Choose the correct answer below.

- A. $(10, \infty)$
- B. $(-\infty, 10)$ or $(10, \infty)$
- C. $(-\infty, 10)$
- D. $(-\infty, \infty)$

ID: 8.3.5

80.  Use the vertical line test to determine if y is a function of x in the given graph.

Is y a function of x?

○    Yes

○    No
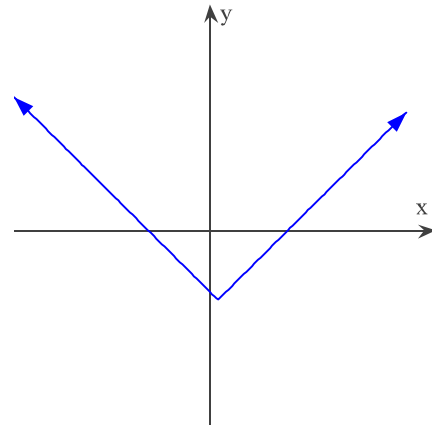


ID: 8.2.1

81.  Solve the quadratic equation by completing the square.

$$x^2 + 12x + 45 = 0$$

The solution set is { ☐ }.

(Type an exact answer, using radicals as needed. Use a comma to separate answers as needed. Express complex numbers in terms of $i$. Simplify your answer.)

ID: 11.1.41

82.  Divide.

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

$$\frac{7 + i}{7 - i} = \boxed{\phantom{x}}$$

(Type integer or fractions. Type your answer in the form $a + bi$.)

ID: 10.7.71

83.    Divide and, if possible, simplify.

$$\frac{\sqrt{60}}{\sqrt{5}}$$

$\dfrac{\sqrt{60}}{\sqrt{5}} = \boxed{\phantom{x}}$

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

ID: 10.4.45

84.    Use properties of logarithms to condense the logarithmic expression below. Write the expression as a single logarithm whose coefficient is 1. Where possible, evaluate logarithmic expressions.

$$4 \ln\ x - 3 \ln y$$

$4 \ln\ x - 3 \ln y = \boxed{\phantom{x}}$ (Simplify your answer.)

ID: 12.3.51

85.    Graph the given function by making a table of coordinates.

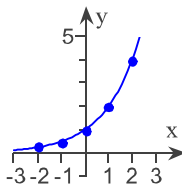$$f(x) = 2^x$$

Complete the table of coordinates.

| x | $-2$ | $-1$ | 0 | 1 | 2 |
|---|---|---|---|---|---|
| y | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ |

(Type integers or fractions. Simplify your answers.)

Choose the correct graph below.
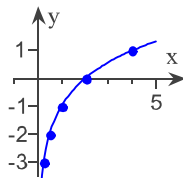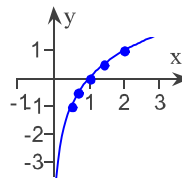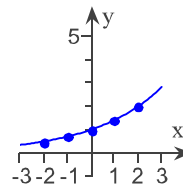
○A.


○B.


○C.


○D.


ID: 12.1.17

86.     Multiply as indicated.

$$\frac{x^2 - 5x + 4}{x^2 - 2x - 8} \cdot \frac{x^2 - 4}{x^2 - 1}$$

$$\frac{x^2 - 5x + 4}{x^2 - 2x - 8} \cdot \frac{x^2 - 4}{x^2 - 1} = \boxed{\phantom{x}}$$ (Simplify your answer.)

ID: 7.2.19

87.     Solve the logarithmic equation. Be sure to reject any value of x that is not in the domain of the original logarithmic expressions.

$$8 \log x = \log 256$$

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

- ○ A.   The solution set is $\{\blacksquare\}$.
   (Type an exact answer in simplified form.)
- ○ B.   There is no solution.

ID: 12.4.81

88.     Rationalize the denominator.

$$\frac{\sqrt{x} + 1}{\sqrt{x} + 3}$$

$$\frac{\sqrt{x} + 1}{\sqrt{x} + 3} = \boxed{\phantom{x}}$$

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

ID: 10.5.87

89.  Solve the rational equation. If the equation has no solution, so state.

$$\frac{7}{x+1} - \frac{4}{x+6} = \frac{17}{x^2+7x+6}$$

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

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

○B.  There is no solution.

ID: 7.6.44

90.  Let $f(x) = 9x$ and $g(x) = -2x - 7$. Find $(f+g)(x)$, $(f-g)(x)$, $(fg)(x)$, and $\left(\dfrac{f}{g}\right)(x)$.

$(f+g)(x) = \boxed{\phantom{x}}$ (Simplify your answer.)

$(f-g)(x) = \boxed{\phantom{x}}$ (Simplify your answer.)

$(fg)(x) = \boxed{\phantom{x}}$ (Simplify your answer.)

$\left(\dfrac{f}{g}\right)(x) = \boxed{\phantom{x}}$ (Simplify your answer.)

ID: 8.3.17

91.  Evaluate or simplify the expression without using a calculator.

$$e^{\ln 4x^5}$$

$e^{\ln 4x^5} = \boxed{\phantom{x}}$

ID: 12.2.69

92.  Solve the equation by the square root property. If possible, simplify radicals or rationalize denominators.

$$(x-8)^2 = -225$$

The solution set is { $\boxed{\phantom{x}}$ }

(Simplify your answer. Type an exact answer, using radicals as needed. Use a comma to separate answers as needed. Express imaginary solutions in the form $a + bi$.)

ID: 11.1.17

93. Multiply and simplify. Assume that all variables in a radicand represent positive real numbers and no radicands involve negative quantities raised to even powers.
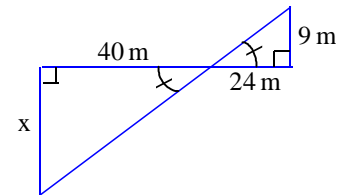
$$\sqrt[5]{16x^5y^7z^6} \cdot \sqrt[5]{4x^7y^7z^3}$$

$\sqrt[5]{16x^5y^7z^6} \cdot \sqrt[5]{4x^7y^7z^3} = \Box$

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

ID: 10.3.79

94. Use similar triangles and the fact that corresponding sides are proportional to find the length of the side marked with an x.



The missing length, x, is $\Box$ meters.

ID: 7.7.29

95. Solve the logarithmic equation. Be sure to reject any value of x that is not in the domain of the original logarithmic expressions. Give the exact answer.

$$\log_2(x-6) + \log_2(x-5) - \log_2 x = 1$$

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

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

ID: 12.4.95

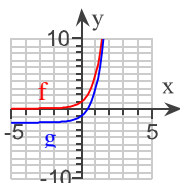96. Graph the functions $f(x) = 5^x$ and $g(x) = 5^x - 2$ in the same rectangular coordinate system. Select integers $-2$ to $2$, inclusive, for x. Then describe how the graph of g is related to the graph of f. If applicable, use a graphing utility to confirm your hand-drawn graphs.
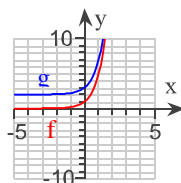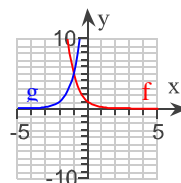
Choose the correct graphs of f and g below.

○A.
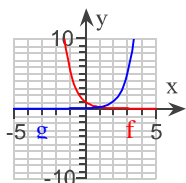
○B.

○C.

○D.

The graph of g is obtained by shifting the graph of f ☐ unit(s)

| up |
| to the left |
| down |
| to the right |

.

ID: 12.1.31

97. Add or subtract as indicated.

$$5\sqrt[3]{3} - \sqrt[3]{3}$$

$5\sqrt[3]{3} - \sqrt[3]{3} = \boxed{\phantom{0}}$

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

ID: 10.4.3

98. Solve the exponential equation by expressing each side as a power of the same base and then equating exponents.

$$8^{\frac{x-9}{10}} = \sqrt{8}$$

The solution set is $\{\boxed{\phantom{0}}\}$.

ID: 12.4.15

99. Approximate the number using a calculator.

$$e^{1.5}$$

$e^{1.5} \approx$ ☐ (Round to three decimal places.)

ID: 12.1.7

100. Solve the following logarithmic equation. Be sure to reject any value of x that is not in the domain of the original logarithmic expression. Give the exact answer. Then, use a calculator to obtain a decimal approximation, correct to two decimal places, for the solution.

$$9 + 3 \ln x = 33$$

What is the exact solution? Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

○ A. The solution set is { ☐ }.
   (Type an exact answer in terms of $e$.)

○ B. There is no solution.

What is the decimal approximation of the solution? Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

○ A. The solution set is { ☐ }.
   (Round to two decimal places as needed.)

○ B. There is no solution.

ID: 12.4.61

101. Complete the table for a savings account subject to continuous compounding.

$$(A = P e^{rt})$$

| Amount Invested | Annual Interest Rate | Accumulated Amount | Time t in years |
|---|---|---|---|
| $6000 | 3% | $12,000 | ? |

Let A represent the accumulated amount, P the amount invested, r the annual interest rate, and t the time. Find the time, t.

$t \approx$ ☐ years
(Round to one decimal place as needed.)

ID: 12.4.107

102. Solve the following equation. Check each proposed solution by direct substitution or with a graphing utility.
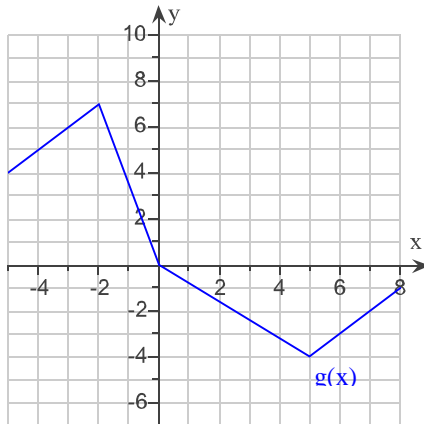
$$(\log \; x)\,(3 \log \; x + 4) = 15$$

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

○A. The solution set is { ▢ }.
   (Type your answers using exponential notation. Use a comma to separate answers as needed.)

○B. There is no solution.

ID: 12.4.145

103. For what value of x is g(x) = −4?          x = ▢



ID: 8.2.19

104. Find the solution set for the equation.

$$|x - 3| = |5 - x|$$

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

○A. The solution set is { ▢ }.
   (Simplify your answer. Use a comma to separate answers as needed.)

○B. The solution set is all real numbers.

○C. The solution is ∅.

ID: 9.3.33

105. The formula $S = C(1 + r)^t$ models inflation, where $C =$ the value today, $r =$ the annual inflation rate (in decimal form), and $S =$ the inflated value t years from now. If the inflation rate is 2%, use the formula to find out how much a house now worth $93,000 will be worth in 6 years. Round your answer to the nearest dollar.

$\$\boxed{\phantom{xx}}$ (Round to the nearest dollar.)

ID: 12.1.55

106. Solve for x.

$$6^{4x-1} = 216$$

The solution set is $\{\boxed{\phantom{xx}}\}$.

ID: 12.4.5

107. Find the solution set for the equation.

$$|2x - 1| + 8 = 8$$

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

○A. The solution set is $\{\blacksquare\}$.
(Simplify your answer. Use a comma to separate answers as needed.)

○B. The solution set is all real numbers.

○C. The solution set is ∅.

ID: 9.3.25

108. Simplify the rational expression. If the rational expression cannot be simplified, so state.

$$\frac{x + 1}{x^2 - 1}$$

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

○A. $\dfrac{x + 1}{x^2 - 1} = \blacksquare$ (Simplify your answer.)

○B. The expression cannot be simplified.

ID: 7.1.33

109. Use properties of logarithms to condense the logarithmic expression below. Write the expression as a single logarithm whose coefficient is 1. Where possible, evaluate logarithmic expressions.

$$\frac{1}{4}\ln y + \ln z$$

$$\frac{1}{4}\ln y + \ln z = \boxed{\phantom{xx}}$$

(Simplify your answer.)

ID: 12.3.47

110. Among all pairs of numbers whose difference is 16, find a pair whose product is as small as possible. What is the minimum product?

The pair of numbers whose difference is 16 and whose product is as small as possible is $\boxed{\phantom{xx}}$.
(Use a comma to separate answers.)

The minimum product is $\boxed{\phantom{xx}}$.

ID: 11.3.61

111. Find the domain of the logarithmic function.

$$f(x) = \log(13 - x)$$

The domain of $f(x) = \log(13 - x)$ is $\boxed{\phantom{xx}}$.
(Type your answer in interval notation.)

ID: 12.2.49

112.    Consider the function $f(x) = 2x^2 - 12x - 8$.

    **a.**  Determine, without graphing, whether the function has a minimum value or a maximum value.
    **b.**  Find the minimum or maximum value and determine where it occurs.
    **c.**  Identify the function's domain and its range.

  **a.**  The function has a [ maximum / minimum ] value.

  **b.**  The minimum/maximum value is ☐. It occurs at x = ☐.

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

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

ID: 11.3.39

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113.    Perform the indicated operation.

$$\frac{\sqrt{175}}{4} + \frac{\sqrt{112}}{3}$$

$$\frac{\sqrt{175}}{4} + \frac{\sqrt{112}}{3} = \boxed{\phantom{0}}$$

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

ID: 10.4.67

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114.    Use properties of logarithms to expand the logarithmic expression below as much as possible.

$$\log_f \frac{\sqrt{a}\, b^7}{c^2}$$

$$\log_f \frac{\sqrt{a}\, b^7}{c^2} = \boxed{\phantom{0}}$$   (Simplify your answer.)

ID: 12.3.33

115. Use the compound interest formula $A = P(1 + r)^t$ to find the annual interest rate, r, if in 2 years an investment of \$2,000 grows to \$2,205.

The rate is ☐ %.

ID: 11.1.105

116. Solve the following exponential equation by expressing each side as a power of the same base and then equating exponents.

$$3^{x-7} = \frac{1}{81}$$

The solution set is {☐}.

ID: 12.4.13

117. Use the vertex and intercepts to sketch the graph of the quadratic function. Then use the graph to identify the range of the function.
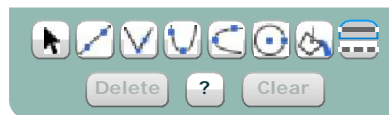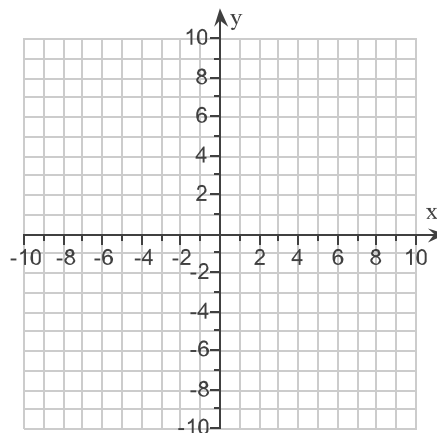
$$y - 2 = (x - 1)^2$$

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

Click to enlarge graph

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

ID: 11.3.21

118. Use properties of logarithms to expand each logarithmic expression as much as possible. Evaluate logarithmic expressions without using a calculator if possible.

$$\log_b(z^5 x)$$

$\log_b(z^5 x) = $ ☐

ID: 12.3.21

119.    Three times the square of the difference between a number and 3 is $-12$. Find the number(s).

The number(s) are $\boxed{\phantom{xx}}$.

(Use a comma to separate answers as needed. Express complex numbers in terms of $i$. Simplify your answer.)
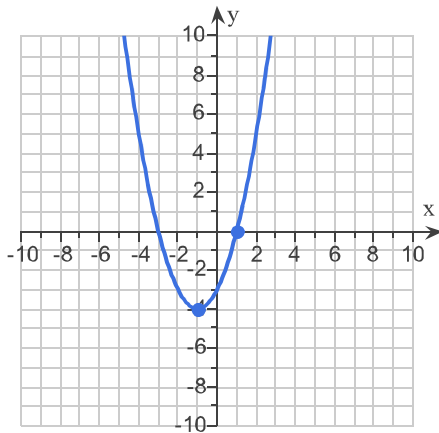
ID: 11.1.93

1.  A, 2

2.  A, $(-\infty,2]\cup[4,\infty)$
    A

3.  B

4.  $9x\sqrt{2xy}$

5.  

    $[-4,\infty)$

6.  $4^y = 64$

7.  $\sqrt{x}$

8.  314
    3
    7.4
    170
    the height of the building
    B

9.  $\dfrac{1}{x+8y}$

10. $-\dfrac{5x}{(x-6)(x+3)(x-2)}$

**Student:** _____
**Date:** _____
**Time:** _____

**Instructor:** shannon gracey
**Course:** MATH 64/Summer 2013
**Book:** Blitzer: Introductory & Intermediate
Algebra for College Students, 4e

**Assignment:** Practice Final

11.     A, $\dfrac{29}{6}$

12.     A, 16

13.     A

14.     3.6860

15.     $-3 + 2\sqrt{3}, -3 - 2\sqrt{3}$

16.     $2^5 = M$

17.     $\dfrac{3x + 3}{x - 2}$

18.     15,220

19.     $44 - 58\,i$

20.     $-\dfrac{3}{2}, 3$

21.     A, 18,0

22.     A, $\dfrac{x - y}{3x - y}$

23.     A, 6

24.     5

25.     $(-2, -10)$

26.     $1$

27.     $x^2 - 18$

28.     $-8$

29.     $\ln(11x)$

30.     $37\sqrt[3]{4}$

31.     $\dfrac{11y+4}{3y(y+2)}$

32.     $8$

33.     $2x^3$

34.     $\dfrac{9\sqrt[3]{x^2}}{x}$

35.     $\dfrac{\ln 210}{\ln 2} + 1$

        $8.71$

36.     $-\dfrac{5}{2}i$

37.     $\dfrac{7}{x-7}$

38.     $\dfrac{2x+1}{5x-1}$

39.     $A, [2,5)$

        $A, [-4,5)$

40. $\dfrac{\ln 27}{\ln 2}$

    4.75

41. $\dfrac{\sqrt{26}}{13}$

42. $9 + \log x$

43. $-9\sqrt{7}$

44. A, $(-2,10)$

    A

45. 50

    35

46. B

47. $\dfrac{1}{x-10}$

48. $\left(-5, -\dfrac{15}{2}\right)$

49. $\dfrac{\ln 310}{9}$

    0.64

50. A, 49

51. 3.7

52. No

    2,5

    4,5

53. A, $\dfrac{26}{5}$

**Student:** _____
**Date:** _____
**Time:** _____

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Algebra for College Students, 4e

**Assignment:** Practice Final

54. $\dfrac{16}{x}$

55. $2 = \log_a 987$

56. $-6i, 6i, -\sqrt{2}, \sqrt{2}$

57. $\dfrac{4}{3}, 0$

58. $6, -\dfrac{1}{2}$

59. $A, 5, -\dfrac{11}{3}$

60. $-\dfrac{fr^2}{Gn}$

61. $-10 + 5\sqrt{5}$

62. $15$

63. $A, \dfrac{5}{4}$

64. $-5$
$1$
$19$
$145$
$384b^2 - 5$

65. $\dfrac{-y^2 + 3y + 4}{12y^2}$

66. $125y^{2/3}$

67. $7 - \ln 2$

68.     A, 3

69.     $-\dfrac{\sqrt{15}}{5}, \dfrac{\sqrt{15}}{5}$

70.     $\dfrac{-1 - i\sqrt{179}}{10}, \dfrac{-1 + i\sqrt{179}}{10}$

71.     1

72.     $-4$

73.     A

74.     $x - 7$

75.     C

76.     x
         x
         6

77.     $-8 - 22\sqrt{5}$

78.     $i$

79.     B

80.     Yes

81.     $-6 + 3i, \ -6 - 3i$

82. $\dfrac{24}{25} + \dfrac{7}{25} i$

83. $2\sqrt{3}$

84. $\ln\left(\dfrac{x^4}{y^3}\right)$

85. 
$\dfrac{1}{4}$

$\dfrac{1}{2}$

$1$

$2$

$4$

B

86. $\dfrac{x-2}{x+1}$

87. A, 2

88. $\dfrac{x - 2\sqrt{x} - 3}{x - 9}$

89. A, $-7$

90. 
$7x - 7$

$11x + 7$

$-18x^2 - 63x$

$\dfrac{9x}{-2x - 7}$

91. $4x^5$

92. $8 + 15i, 8 - 15i$

93. $2x^2 y^2 z \sqrt[5]{2x^2 y^4 z^4}$

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| | |
|---|---|
| 94. | 15 |
| 95. | A, 10 |
| 96. | B<br>2<br>down |
| 97. | $4\sqrt[3]{3}$ |
| 98. | 14 |
| 99. | 4.482 |
| 100. | A, $e^8$<br>A, 2980.96 |
| 101. | 23.1 |
| 102. | A, $\dfrac{1}{10^3}, 10^{\frac{5}{3}}$ |
| 103. | 5 |
| 104. | A, 4 |
| 105. | 104,733 |
| 106. | 1 |
| 107. | A, $\dfrac{1}{2}$ |

108.  $A, \dfrac{1}{x-1}$

109.  $\ln\left(z\sqrt[4]{y}\right)$

110.  $8, -8$
$-64$

111.  $(-\infty, 13)$

112.  minimum
$-26$
$3$
$(-\infty, \infty)$
$[-26, \infty)$

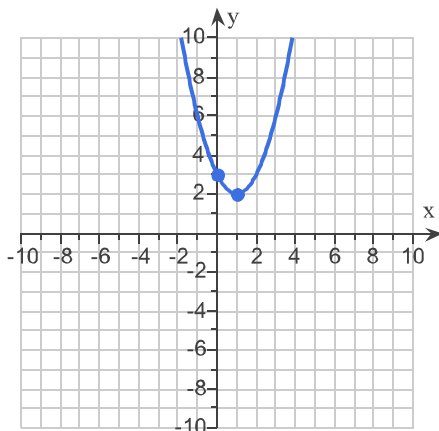113.  $\dfrac{31\sqrt{7}}{12}$

114.  $\dfrac{1}{2}\log_f a + 7\log_f b - 2\log_f c$

115.  $5$

116.  $3$

117.  

$[2, \infty)$

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118.     $5 \log_b z + \log_b x$

119.     $3 + 2i, 3 - 2i$