

Print out the entire review and show all your work in the spaces provided.

Evaluate the algebraic expression for the given value or values of the variable(s).

1) $\frac{y - 4x}{3x + xy}$; $x = -3$ and $y = 5$

1) _____

2) $6 + 6(x - 2)^3$; $x = 4$

2) _____

Rewrite the expression without absolute value bars.

3) $||-1| - |-2||$

3) _____

Evaluate the expression for the given values of x and y .

4) $\frac{|x|}{x} + \frac{|y|}{y}$; $x = 6$ and $y = -2$

4) _____

Simplify the algebraic expression.

5) $-10(3r + 7) + 7(4r + 9)$

5) _____

Evaluate the exponential expression.

6) -3^2

6) _____

7) -5^{-2}

7) _____

Simplify the exponential expression.

8) $x^{-8} \cdot x^5$

8) _____

9) $(-5x^3y)(-10x^4y^2)$

9) _____

10) $2x^{-4}y^3$

10) _____

11) $\frac{40x^6y^{13}z^6}{8x^3y^6z^5}$

11) _____

12) $\left(\frac{xy^3}{x^6y}\right)^{-2}$

12) _____

Evaluate the expression or indicate that the root is not a real number.

13) $\sqrt{64 + 36}$

13) _____

Use the product rule to simplify the expression.

14) $\sqrt{28}$

14) _____

15) $\sqrt{6x^2} \cdot \sqrt{12x}$

15) _____

Use the quotient rule to simplify the expression.

16) $\sqrt{\frac{81}{25}}$

16) _____

Add or subtract terms whenever possible.

17) $-3\sqrt{162} + 2\sqrt{200} - 9\sqrt{8}$

17) _____

18) $\sqrt{36} + \sqrt{12} + \sqrt{64} + \sqrt{363}$

18) _____

Rationalize the denominator.

19) $\frac{1}{\sqrt{2}}$

19) _____

20) $\frac{\sqrt{25}}{\sqrt{11}}$

20) _____

$$21) \frac{4}{\sqrt{10} + \sqrt{14}}$$

21) _____

$$22) \frac{7}{8 - \sqrt{6}}$$

22) _____

Evaluate the radical expressions or indicate that the root is not a real number.

$$23) \sqrt[3]{125}$$

23) _____

Evaluate the expression without using a calculator.

$$24) 16^{-3/2}$$

24) _____

$$25) 64^{4/3}$$

25) _____

Simplify using properties of exponents.

$$26) (81x^6y^4)^{1/2}$$

26) _____

$$27) (8x^{3/4})(7x^{1/2})$$

27) _____

Perform the indicated operations. Write the resulting polynomial in standard form.

$$28) (7x^5 - 20x^3 + 4) - (4x^5 + 20x^3 + 20)$$

28) _____

Find the product.

$$29) (x + 10)(x^2 + 6x - 7)$$

29) _____

$$30) (5 + 4x)(5 - 4x)$$

30) _____

31) $(10x^2 + 7)^2$

31) _____

32) $(x + 12y)(4x - 11y)$

32) _____

Factor

33) $2x^2 - 4x$

33) _____

34) $x(x + 6) + 8(x + 6)$

34) _____

35) $x^3 + 7x - 3x^2 - 21$

35) _____

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

36) _____

37) $x^2 - 2x - 15$

37) _____

38) $5x^2 + 32x + 12$

38) _____

39) $x^2 + 9x + 18$

39) _____

40) $16x^2 - 81$

40) _____

41) $x^4 - 625$

41) _____

42) $x^3 - 64$

42) _____

43) $125x^3 + 27$

43) _____

44) $3x^2 - 21x + 18$

44) _____

45) $x^3 - 16x$

45) _____

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

46) $\frac{3x + 3}{15x^2 + 21x + 6}$

46) _____

Multiply or divide as indicated.

47) $\frac{4x - 6}{2x - 4} \cdot \frac{x - 2}{6x - 9}$

47) _____

48) $\frac{x^2 + 9x + 20}{x^2 + x - 20} \cdot \frac{x^2 - 25}{x^2 - x - 20}$

48) _____

49) $\frac{21x - 21}{9} \div \frac{7x - 7}{99}$

49) _____

Add or subtract as indicated.

50) $\frac{8x}{x - 7} - \frac{56}{x - 7}$

50) _____

$$51) \frac{9}{x-9} + \frac{23}{9-x}$$

51) _____

$$52) \frac{x-6}{x^2+4x-5} + \frac{2x-3}{x^2+2x-15}$$

52) _____

Solve the linear equation.

$$53) 14t - 17 = 6t - 3$$

53) _____

$$54) 2(x+6) + 6 = 3(x+5) + 7$$

54) _____

$$55) \frac{x}{5} = \frac{x}{3} + \frac{6}{5}$$

55) _____

Solve the rational equation.

$$56) \frac{x}{x-6} - 4 = \frac{6}{x-6}$$

56) _____

$$57) \frac{1}{x-4} + \frac{1}{4x-16} = \frac{5}{4}$$

57) _____

Solve the equation by factoring.

$$58) 7x^2 - 20x = 3$$

58) _____

Solve the formula for the specified variable.

59) $V = \frac{1}{3}Bh$ for h

59) _____

60) $F = \frac{9}{5}C + 32$ for C

60) _____

Solve the quadratic equation by the square root property.

61) $(2x - 1)^2 = 121$

61) _____

Solve the quadratic equation by completing the square.

62) $x^2 + 12x = -22$

62) _____

63) $x^2 + 3x - 9 = 0$

63) _____

64) $x^2 + 3x - 9 = 0$

64) _____

Solve the quadratic equation using the quadratic formula.

65) $x^2 + 14x + 26 = 0$

65) _____

66) $x^2 + 5x + 5 = 0$

66) _____

67) $2x^2 - 5x + 6 = 0$

67) _____

Solve the radical equation, and check all proposed solutions.

68) $\sqrt{7x - 6} = 6$

68) _____

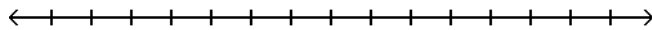
69) $\sqrt{20x - 20} = x + 4$

69) _____

Solve the linear inequality. Other than \emptyset , use interval notation to express the solution set and graph the solution set on a number line.

70) $2x - 8 \geq 10$

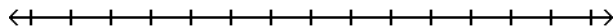
70) _____



Solve the compound inequality. Other than \emptyset , use interval notation to express the solution set and graph the solution set on a number line.

71) $10 \leq 4x - 2 \leq 18$

71) _____



Solve the absolute value equation or indicate that the equation has no solution.

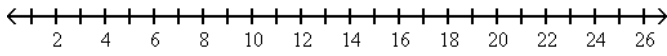
72) $|5x + 2| = 6$

72) _____

Solve the absolute value inequality and graph the solution set on a number line.

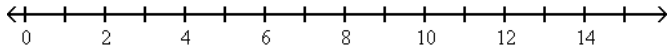
73) $|x - 4| < 2$

73) _____



74) $|7x - 9| - 2 > -10$

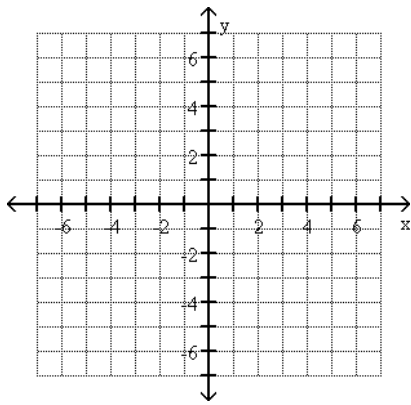
74) _____



Plot the given point in a rectangular coordinate system.

75) $(-2, 4)$

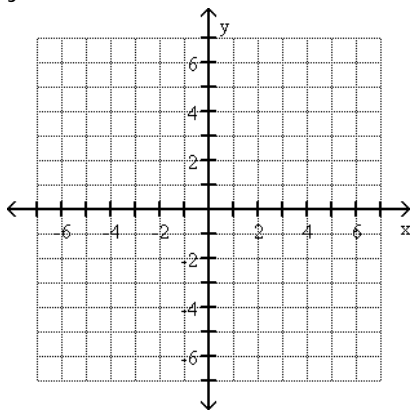
75) _____



Graph the equation.

76) $y = 2x + 6$

76) _____



Find the slope of the line that goes through the given points.

77) $(-2, 5)$ and $(\frac{1}{5}, -2)$

77) _____

78) $(-3, -5), (1, -3)$

78) _____

Use the given conditions to write an equation for the line in point-slope form.

79) Slope = -2 , passing through $(-3, 3)$

79) _____

80) Passing through $(4, 2)$ and $(3, 7)$

80) _____

Use the given conditions to write an equation for the line in the indicated form.

81) Passing through $(2, 5)$ and parallel to the line whose equation is $y = 2x - 6$;
point-slope form

81) _____

82) Passing through $(4, 2)$ and perpendicular to the line whose equation is $y = 4x + 7$;
point-slope form

82) _____

Find the inverse of the one-to-one function.

83) $f(x) = 4x + 5$

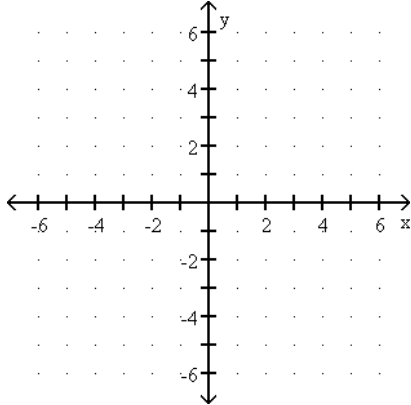
83) _____

84) $f(x) = (x + 3)^3$

84) _____

Graph the function by making a table of coordinates.

85) $f(x) = 3^x$



85) _____

Write the equation in its equivalent exponential form.

86) $\log_b 64 = 2$

86) _____

Write the equation in its equivalent logarithmic form.

87) $2^{-2} = \frac{1}{4}$

87) _____

Evaluate the expression without using a calculator.

88) $\log_{64} 4$

88) _____

89) $\log_2 4$

89) _____

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

90) $\log_b (yz^4)$

90) _____

91) $\log_2 \left(\frac{x^2}{y^7} \right)$

91) _____

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.

92) $\ln x + 7 \ln y$

92) _____

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

93) $\log_9 17$

93) _____

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

94) $4(1 + 2x) = 64$

94) _____

Solve the exponential equation. Use a calculator to obtain a decimal approximation, correct to two decimal places, for the solution.

95) $57^x = 4.3$

95) _____

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

96) $\log_4(x - 3) = 1$

96) _____

Solve the problem.

97)

Let $A = \begin{bmatrix} -1 & 7 \\ -3 & 9 \\ 6 & -6 \end{bmatrix}$ and $B = \begin{bmatrix} 3 & 4 \\ -8 & -8 \\ -2 & 7 \end{bmatrix}$. Find $A + B$.

97) _____

98)

Let $A = \begin{bmatrix} 2 & 3 \\ 2 & 5 \end{bmatrix}$ and $B = \begin{bmatrix} 0 & 4 \\ -1 & 6 \end{bmatrix}$. Find $2A + B$.

98) _____

Find the product AB , if possible.

99)

$A = \begin{bmatrix} -1 & 3 \\ 1 & 4 \end{bmatrix}$, $B = \begin{bmatrix} 0 & -2 & 5 \\ 1 & -3 & 2 \end{bmatrix}$

99) _____

Evaluate the determinant.

100)

$\begin{vmatrix} 9 & -6 \\ 8 & 1 \end{vmatrix}$

100) _____

101)

$$\begin{vmatrix} -3 & 5 & -2 \\ 3 & 0 & -3 \\ 3 & 0 & 1 \end{vmatrix}$$

101) _____

Use Cramer's rule to solve the system.

102) $5x = -5y + 10$

$2x = -y - 2$

102) _____

Solve the system of equations by the substitution method.

103)

$4x - 2y = -70$

$x = -3y$

103) _____

104) $x + 3y = 19$

$3x + 2y = 8$

104) _____

Solve the system by the addition method.

105) $2x + 7y = 16$

$2x + 2y = 26$

105) _____

106) $x - 5y = -14$

$4x - 6y = -28$

106) _____

Solve the system of equations.

$$107) \quad x + y + z = 3$$

$$x - y + 2z = 9$$

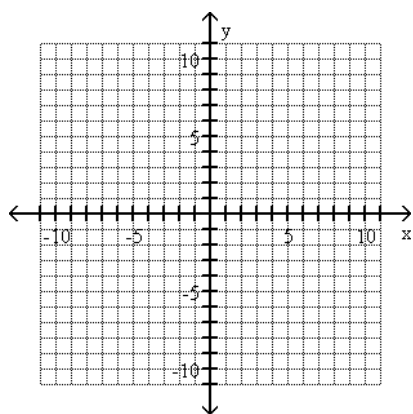
$$5x + y + z = 15$$

107) _____

Graph the ellipse and locate the foci.

$$108) \quad \frac{x^2}{64} + \frac{y^2}{4} = 1$$

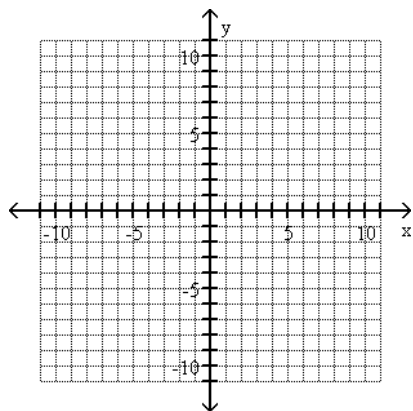
108) _____



Graph the ellipse.

$$109) \quad \frac{(x - 1)^2}{16} + \frac{(y + 1)^2}{9} = 1$$

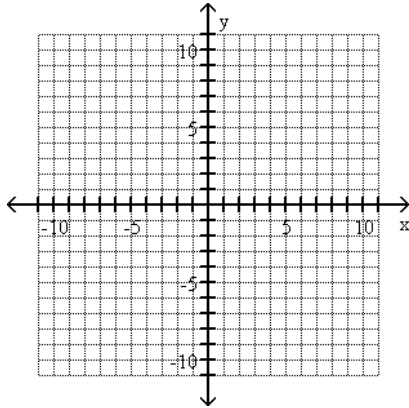
109) _____



Use vertices to graph the hyperbola.

$$110) \frac{y^2}{9} - \frac{x^2}{25} = 1$$

110) _____



Evaluate the function at the given value of the independent variable and simplify.

$$111) f(x) = -3x - 8; \quad f(-2)$$

111) _____

$$112) f(x) = \sqrt{x + 13}; \quad f(-4)$$

112) _____

Add or subtract as indicated and write the result in standard form.

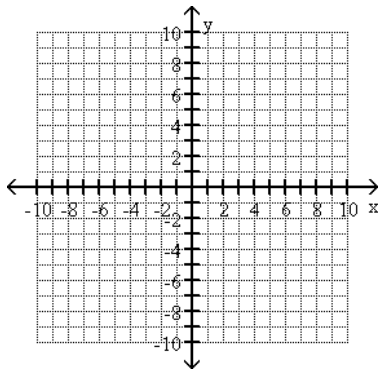
$$113) (9 - 4i) + (6 + 9i)$$

113) _____

Graph, identify vertex and axis of symmetry.

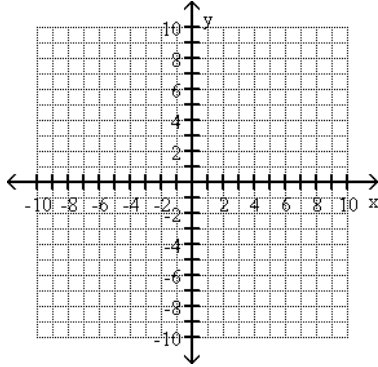
$$114) h(x) = (x + 2)^2$$

114) _____



115) $g(x) = x^2 + 2$

115) _____



Find the product and write the result in standard form.

116) $-9i(7i - 2)$

116) _____

117) $(4 - 7i)(-5 - 2i)$

117) _____

Perform the indicated operations and write the result in standard form.

118) $(-7 + \sqrt{-4})^2$

118) _____

119) $\sqrt{-16} + \sqrt{-64}$

119) _____

Classify the angle as acute, right, obtuse, or straight.

120) π

120) _____

121) 98°

121) _____

Convert the angle in degrees to radians. Express answer as a multiple of π .

122) -90°

122) _____

Convert the angle in radians to degrees.

123) $\frac{5}{4}\pi$

123) _____

Find a positive angle less than 360° that is coterminal with the given angle.

124) 558°

124) _____

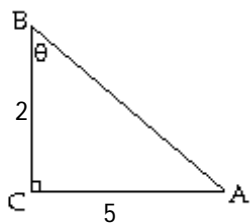
125) -79°

125) _____

Use the Pythagorean Theorem to find the length of the missing side. Then find the indicated trigonometric function of the given angle. Give an exact answer with a rational denominator.

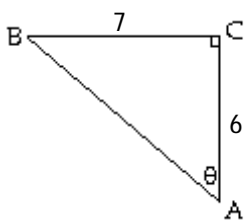
126) Find $\csc \theta$.

126) _____



127) Find $\tan \theta$.

127) _____



Find the reference angle for the given angle.

128) -243°

128) _____

129) 107°

129) _____

Find exact value for each expression. Do not use calculator and rationalize all denominators.

130) $\sec 30^\circ$

130) _____

131) $\sin 60^\circ$

131) _____

132) $\sin 855^\circ$

132) _____

133) $\tan 570^\circ$

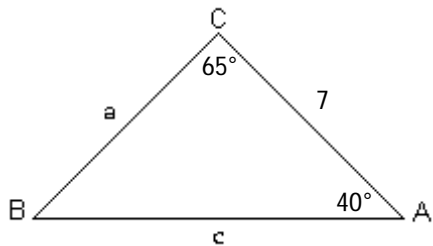
133) _____

134) $\csc 660^\circ$

134) _____

Solve the triangle.

135)



135) _____

Solve the triangle. Round lengths to the nearest tenth and angle measures to the nearest degree.

136) $A = 26^\circ$, $B = 51^\circ$, $c = 25$

136) _____

137) $A = 30^\circ$, $a = 22$, $b = 44$

137) _____

138) $B = 33^\circ$, $b = 19$, $a = 34$

138) _____

Solve the triangle. Round lengths to the nearest tenth and angle measures to the nearest degree.

139) $a = 5$, $b = 8$, $C = 120^\circ$

139) _____

140) $a = 6$, $c = 11$, $B = 109^\circ$

140) _____

Find the common difference for the arithmetic sequence.

141) $6, 11, 16, 21, \dots$

141) _____

Write the first five terms of the arithmetic sequence.

142) $a_1 = 16; d = -3$

142) _____

Use the formula for the general term (the n th term) of an arithmetic sequence to find the indicated term of the sequence with the given first term, a_1 , and common difference, d .

143) Find a_{13} when $a_1 = 29, d = -3$.

143) _____

Find the indicated sum.

144) Find the sum of the first 40 terms of the arithmetic sequence: 15, 21, 27, 33, ...

144) _____

Write the first five terms of the geometric sequence.

145) $a_1 = 5; r = 4$

145) _____

Use the formula for the sum of the first n terms of a geometric sequence to solve.

146) Find the sum of the first 13 terms of the geometric sequence: 7, -14, 28, -56, 112, ...

146) _____

Find the sum of the infinite geometric series, if it exists.

147) $4 - 1 + \frac{1}{4} - \frac{1}{16} + \dots$

147) _____