

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

Solve.

1) Maria and Charlie can deliver 80 papers in 2 hours. How long would it take them to deliver 164 papers? 1) _____

2) Sven can type 30 words per minute. How many words would he type in $\frac{1}{4}$ hour (15 minutes)? 2) _____

3) If a boat uses 21 gallons of gas to go 67 miles, how many miles can the boat travel on 84 gallons of gas? 3) _____

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

4) $(x + 4y)^2$; $x = 2$ and $y = 2$ 4) _____

5) $x^2 - 5(x - y)$; $x = 8$ and $y = 2$ 5) _____

Solve.

6) A stone is dropped from a tower that is 740 feet high. The formula $h = 740 - 16t^2$ describes the stone's height above the ground, h , in feet, t seconds after it was dropped. What is the stone's height 5 seconds after it is released? 6) _____

Find the intersection of the two sets.

7) $\{1, 7, 4, 9\} \cap \{4, 6, 1\}$ 7) _____

Find the union of the two sets.

8) $\{1, 11\} \cup \{1, 4, 9\}$ 8) _____

List all numbers from the given set B that are members of the given Real Number subset.

9) $B = \{14, \sqrt{6}, -19, 0, \frac{5}{6}, \sqrt{16}, 0.\bar{8}, 0.62\}$ Rational numbers 9) _____

10) $B = \{3, \sqrt{8}, -15, 0, \frac{4}{5}, \sqrt{4}, 0.\bar{6}, 0.7\}$ Irrational numbers 10) _____

Determine whether the statement is true or false.

11) $19 < -8$ 11) _____

12) $-\pi \geq -\pi$ 12) _____

Rewrite the expression without absolute value bars.

13) $||-1|+|-4||$

13) _____

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

14) $\frac{|x|}{x} + \frac{|y|}{y}$; $x = 2$ and $y = -1$

14) _____

State the name of the property illustrated.

15) $6 + (-9) = (-9) + 6$

15) _____

16) $17 \cdot (6 + 3) = 17 \cdot 6 + 17 \cdot 3$

16) _____

17) $18 + (15 + 9) = (18 + 15) + 9$

17) _____

Evaluate the exponential expression.

18) -6^0

18) _____

19) -2^{-4}

19) _____

Simplify the exponential expression.

20) $(x^{-3})^6$

20) _____

21) $\frac{x^{-7}}{x^2}$

21) _____

22) $(-5x^3y)(-9x^6y^5)$

22) _____

23) $\left(\frac{-3x}{y}\right)^2$

23) _____

24) $\frac{x^8y^{-5}}{z^{-9}}$

24) _____

25) $\frac{-36x^{13}y^{13}z^7}{4x^8y^6z^6}$

25) _____

26) $(2x^{-7}y^4z^{-8})^{-1}$

26) _____

27) $\left(\frac{-8x^9y^6}{4x^{13}y^{-3}}\right)^3$

27) _____

28) $(-4x^4y^{-5})(2x^{-1}y)$

28) _____

Write the number in decimal notation without the use of exponents.

29) 1.19×10^7

29) _____

Write the number in scientific notation.

30) 0.000576

30) _____

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

31) $-\sqrt{361}$

31) _____

32) $\sqrt{64+36}$

32) _____

33) $\sqrt{(-14)^2}$

33) _____

Use the product rule to simplify the expression.

34) $\sqrt{486x^2}$

34) _____

35) $\sqrt{5x} \cdot \sqrt{15x}$

35) _____

Use the quotient rule to simplify the expression. We are not assuming that the variable represents a positive number.

36) $\frac{\sqrt{20x^3}}{\sqrt{5x}}$

36) _____

Use the quotient rule to simplify the expression.

37) $\frac{\sqrt{54x^3}}{\sqrt{6x}}$

37) _____

Add or subtract terms whenever possible.

38) $-8\sqrt{24} + 7\sqrt{216} - 6\sqrt{54}$

38) _____

39) $\sqrt{4} + \sqrt{300} + \sqrt{144} + \sqrt{108}$

39) _____

40) $\sqrt{6x} - 7\sqrt{216x} - 2\sqrt{96x}$

40) _____

Rationalize the denominator.

41) $\frac{\sqrt{121}}{\sqrt{3}}$

41) _____

42) $\frac{\sqrt{3}}{\sqrt{13}}$

42) _____

43) $\frac{\sqrt{2}}{\sqrt{11+2}}$

43) _____

44) $\frac{8}{9 - \sqrt{6}}$

44) _____

45) $\frac{6}{\sqrt{5} + \sqrt{11}}$

45) _____

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

46) $\sqrt[3]{(-4)^3}$

46) _____

Simplify the radical expression.

47) $\sqrt[3]{x^7}$

47) _____

48) $\sqrt[3]{42} \cdot \sqrt[3]{49}$

48) _____

49) $\sqrt[3]{30} \cdot \sqrt[3]{36}$

49) _____

Add or subtract terms whenever possible.

50) $y\sqrt[3]{24x} - \sqrt[3]{375xy^3}$

50) _____

Evaluate the expression without using a calculator.

51) $27^{4/3}$

51) _____

Simplify using properties of exponents.

52) $\frac{20x^{3/2}}{4x^{2/3}}$

52) _____

53) $\frac{70x^{3/4}}{10x^{1/3}}$

53) _____

Simplify by reducing the index of the radical.

54) $\sqrt[8]{25x^2}$

54) _____

Factor completely, or state that the polynomial is prime.

55) $4x^3 - 484x$

55) _____

56) $2x^2 - 16x - 18$

56) _____

57) $x^3 - 4x^2 - 9x + 36$

57) _____

58) $x^2 + 4$

58) _____

59) $8x^3 - 8$

59) _____

60) $2x^3 + 250$

60) _____

61) $12x^5 - 12x$

61) _____

62) $27y^4 - 75y^2$

62) _____

Factor and simplify the algebraic expression.

63) $x^{2/3} - x^{1/3}$

63) _____

64) $(x+9)^{1/4} + (x+9)^{3/4}$

64) _____

65) $(x+5)^{-1/5} + (x+5)^{-6/5}$

65) _____

Multiply or divide as indicated.

66) $\frac{2x-2}{x} \cdot \frac{4x^2}{9x-9}$

66) _____

67) $\frac{x^3+1}{x^3-x^2+x} \cdot \frac{5x}{-20x-20}$

67) _____

68) $\frac{x^3+1}{x^3-x^2+x} \cdot \frac{8x}{-88x-88}$

68) _____

69) $\frac{x^2-15x+44}{x^2-13x+42} \cdot \frac{x^2-8x+7}{x^2-16x+55}$

69) _____

70) $\frac{(y-9)^2}{4} \div \frac{4y-36}{16}$

70) _____

71) $\frac{1}{x+6} \div \frac{3}{x^2-36}$

71) _____

72) $\frac{x^2+13x+36}{x^2+16x+63} \div \frac{x^2+4x}{x^2+17x+70}$

72) _____

$$73) \frac{x^2 + 11x + 28}{x^2 + 13x + 42} \div \frac{x^2 + 4x}{x^2 + 14x + 48}$$

73) _____

Add or subtract as indicated.

$$74) \frac{7x+4}{7x+8} + \frac{7x+12}{7x+8}$$

74) _____

$$75) \frac{x^2+14}{x^2-6x-16} + \frac{7x-4}{x^2-6x-16}$$

75) _____

$$76) \frac{x-4}{x-8} - \frac{2x-5}{x-8}$$

76) _____

$$77) \frac{3}{x} + \frac{7}{x-6}$$

77) _____

$$78) \frac{4}{x^2-3x+2} + \frac{7}{x^2-1}$$

78) _____

$$79) \frac{x}{x^2-16} - \frac{3}{x^2+5x+4}$$

79) _____

$$80) \frac{x+5}{x^2+6x+8} + \frac{5x-2}{x^2+7x+12}$$

80) _____

$$81) \frac{3x}{x+1} + \frac{4}{x-1} - \frac{6}{x^2-1}$$

81) _____

Solve the linear equation.

$$82) 8y + 4(3+y) = 3(y-4) + 10y$$

82) _____

$$83) -7x - 7 - 2(x+1) = 2x - 7$$

83) _____

$$84) \frac{5x}{3} - x = \frac{x}{18} - \frac{7}{6}$$

84) _____

First, write the value or values of the variable that make a denominator zero. Then solve the equation.

$$85) \frac{1}{x} + 3 = \frac{5}{2x} + \frac{13}{4}$$

85) _____

$$86) \frac{x-8}{4x} + 5 = \frac{x+9}{x}$$

86) _____

87) $\frac{x-8}{3x} + 9 = \frac{x+6}{x}$

87) _____

88) $\frac{x-6}{4x} + 7 = \frac{x+3}{x}$

88) _____

Solve the rational equation.

89) $\frac{4}{x-1} + \frac{4}{2x-2} = 6$

89) _____

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

90) _____

91) $\frac{2}{x-5} + \frac{3}{5-x} = \frac{9}{x+3}$

91) _____

92) $\frac{1}{x+7} + \frac{4}{x+5} = \frac{-2}{x^2 + 12x + 35}$

92) _____

93) $\frac{1}{x+6} + \frac{2}{x+3} = \frac{-3}{x^2 + 9x + 18}$

93) _____

94) $\frac{m+8}{m^2-5m+4} - \frac{8}{m^2-2m+1} = \frac{m-8}{m^2-5m+4}$

94) _____

Solve the formula for the specified variable.

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

95) _____

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

96) _____

97) $\frac{1}{a} + \frac{1}{b} = \frac{1}{c}$ for c

97) _____

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

98) $|x+7| = 2$

98) _____

99) $|6x+4| + 2 = 7$

99) _____

100) $|7x+9| - 1 = -4$

100) _____

Solve the equation by factoring.

101) $6x^2 - 53x = 9$

101) _____

Solve the quadratic equation by the square root property.

102) $(x - 6)^2 = 4$

102) _____

Solve the quadratic equation by completing the square.

103) $x^2 + 4x - 9 = 0$

103) _____

Solve the quadratic equation using the quadratic formula.

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

104) _____

105) $2x^2 = -4x - 1$

105) _____

Compute the discriminant. Then determine the number and type of solutions for the given equation.

106) $8x^2 = -5x - 2$

106) _____

Solve the radical equation, and check all proposed solutions.

107) $\sqrt{5x - 4} = 4$

107) _____

108) $\sqrt{7x + 44} = x$

108) _____

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

109) _____

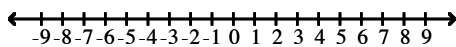
110) $x - \sqrt{3x - 2} = 4$

110) _____

Express the interval in set-builder notation and graph the interval on a number line.

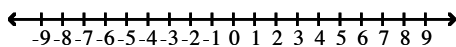
111) $(-3, 4]$

111) _____



112) $\left(-\infty, \frac{6}{5}\right]$

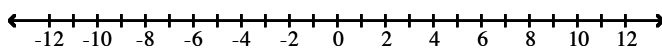
112) _____



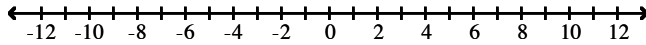
Solve the absolute value inequality. Other than \emptyset , use interval notation to express the solution set and graph the solution set on a number line.

113) $|x - 2| < 0$

113) _____

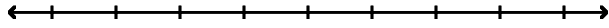


114) $|x+8| \geq 0$



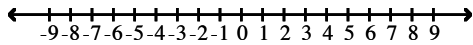
114) _____

115) $|x-3| + 4 \leq 7$



115) _____

116) $5 + \left|1 - \frac{x}{2}\right| \geq 8$



116) _____

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

117) (5, 8), (-2, 8)

117) _____

118) (3, -1) and $(\frac{1}{3}, 2)$

118) _____

119) $(\frac{1}{2}, -1)$ and $(\frac{1}{2}, -4)$

119) _____

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

120) Slope = 2, passing through (-6, 4)

120) _____

121) Slope = $\frac{3}{4}$, passing through (3, 3)

121) _____

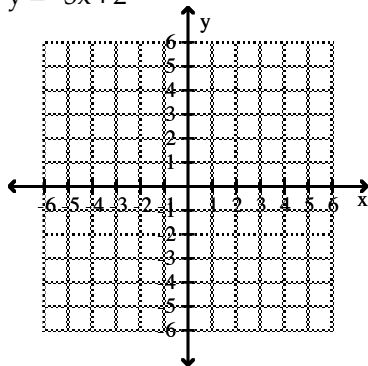
122) Passing through (2, 3) and (5, 2)

122) _____

Graph the line whose equation is given.

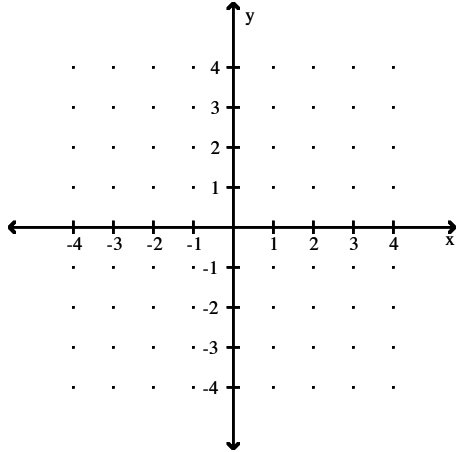
123) $y = -3x + 2$

123) _____



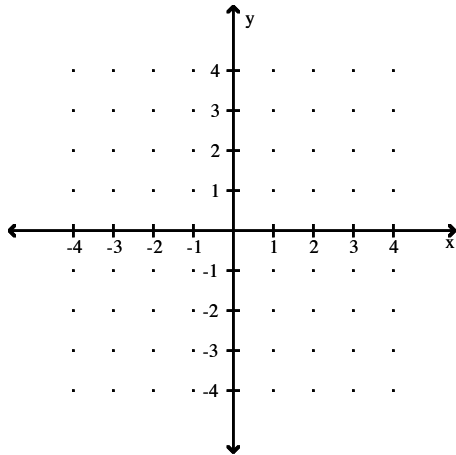
Graph the equation in the rectangular coordinate system.

124) $x = 3$



124) _____

125) $f(x) = -1$

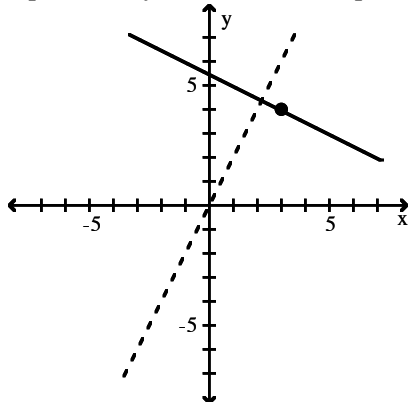


125) _____

Find an equation for the line with the given properties.

126) The solid line L contains the point (3, 4) and is perpendicular to the dotted line whose equation is $y = 2x$. Give the equation of line L in slope-intercept form.

126) _____



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

127) Passing through (5, 3) and parallel to the line whose equation is $y = -2x + 3$;
point-slope form

127) _____

128) Passing through (3, 2) and perpendicular to the line whose equation is $y = \frac{1}{8}x + 6$; 128) _____
slope-intercept form

129) Passing through (4, 2) and parallel to the line whose equation is $y = -\frac{1}{7}x + 5$; 129) _____
slope-intercept form

130) Passing through (2, 4) and perpendicular to the line whose equation is $-7x + y - 7 = 0$; 130) _____
slope-intercept form

Find the distance between the pair of points.

131) (-7, -4) and (2, -1) 131) _____

132) (-4, -7) and (2, 7) 132) _____

Find the midpoint of the line segment whose end points are given.

133) (7, 7) and (6, 9) 133) _____

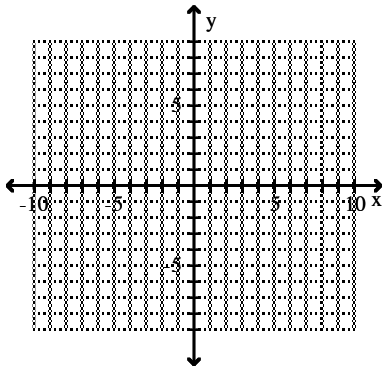
134) $(-7\sqrt{7}, 3\sqrt{2})$ and $(-2\sqrt{7}, 6\sqrt{2})$ 134) _____

Find the center and the radius of the circle.

135) $(x - 8)^2 + (y + 6)^2 = 64$ 135) _____

Graph the equation.

136) $(x - 1)^2 + (y - 5)^2 = 4$ 136) _____



Complete the square and write the equation in standard form. Then give the center and radius of the circle.

137) $x^2 - 18x + 81 + y^2 - 8y + 16 = 25$ 137) _____

138) $x^2 + y^2 + 6x - 2y + 10 = 36$ 138) _____

Answer Key

Testname: 260CH1P

- 1) 4.1 hours
- 2) 450 words
- 3) 268 miles
- 4) 100
- 5) 34
- 6) 340 ft
- 7) {1, 4}
- 8) {1, 4, 9, 11}
- 9) 14, -19, 0, $\frac{5}{6}$, $\sqrt{16}$, 0.62, $0.\bar{8}$
- 10) $\sqrt{8}$
- 11) False
- 12) True
- 13) 5
- 14) 0
- 15) Commutative property of addition
- 16) Distributive property of multiplication over addition
- 17) Associative property of addition
- 18) -1
- 19) $-\frac{1}{16}$
- 20) $\frac{1}{x^{18}}$
- 21) $\frac{1}{x^9}$
- 22) $45x^9y^6$
- 23) $\frac{9x^2}{y^2}$
- 24) $\frac{x^8z^9}{y^5}$
- 25) $-9x^5y^7z$
- 26) $\frac{x^7z^8}{2y^4}$
- 27) $\frac{-8y^{27}}{x^{12}}$
- 28) $\frac{-8x^3}{y^4}$
- 29) 11,900,000
- 30) 5.76×10^{-4}
- 31) -19
- 32) 10
- 33) 14

Answer Key

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34) $9|x|\sqrt{6}$

35) $5|x|\sqrt{3}$

36) $2|x|$

37) $3|x|$

38) $8\sqrt{6}$

39) $16\sqrt{3} + 14$

40) $-49\sqrt{6x}$

41) $\frac{11\sqrt{3}}{3}$

42) $\frac{\sqrt{39}}{13}$

43) $\frac{\sqrt{22} - 2\sqrt{2}}{7}$

44) $\frac{72 + 8\sqrt{6}}{75}$

45) $\sqrt{11} - \sqrt{5}$

46) -4

47) $x^2\sqrt[3]{x}$

48) $7\sqrt[3]{6}$

49) $6\sqrt[3]{5}$

50) $-3y\sqrt[3]{3x}$

51) 81

52) $5x^{5/6}$

53) $7x^{5/12}$

54) $\sqrt[4]{5x}$

55) $4x(x + 11)(x - 11)$

56) $2(x + 1)(x - 9)$

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

58) prime

59) $8(x - 1)(x^2 + x + 1)$

60) $2(x + 5)(x^2 - 5x + 25)$

61) $12x(x^2 + 1)(x + 1)(x - 1)$

62) $3y^2(3y + 5)(3y - 5)$

63) $x^{1/3}(x^{1/3} - 1)$

64) $(x + 9)^{1/4} (1 + (x + 9)^{1/2})$

65) $\frac{(x + 6)}{(x + 5)^{6/5}}$

66) $\frac{8x}{9}$

Answer Key

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67) $-\frac{1}{4}$

68) $-\frac{1}{11}$

69) $\frac{(x-4)(x-1)}{(x-6)(x-5)}$

70) $y - 9$

71) $\frac{x-6}{3}$

72) $\frac{x+10}{x}$

73) $\frac{x+8}{x}$

74) 2

75) $\frac{x+5}{x-8}$

76) $-\frac{x-1}{x-8}$

77) $\frac{10x-18}{x(x-6)}$

78) $\frac{11x-10}{(x-1)(x+1)(x-2)}$

79) $\frac{x^2-2x+12}{(x-4)(x+4)(x+1)}$

80) $\frac{6x^2+16x+11}{(x+4)(x+2)(x+3)}$

81) $\frac{3x-2}{x-1}$

82) {24}

83) $\left\{-\frac{2}{11}\right\}$

84) $\left\{-\frac{21}{11}\right\}$

85) 0; $\{-6\}$

86) 0; $\left\{\frac{44}{17}\right\}$

87) 0; $\left\{\frac{26}{25}\right\}$

88) 0; $\left\{\frac{18}{25}\right\}$

89) {2}

90) {5}

Answer Key

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91) $\left\{\frac{21}{5}\right\}$

92) \emptyset

93) \emptyset

94) $\{-2\}$

95) $h = \frac{3V}{B}$

96) $C = \frac{5}{9}(F - 32)$

97) $c = \frac{ab}{a+b}$

98) $\{-9, -5\}$

99) $\left\{-\frac{3}{2}, \frac{1}{6}\right\}$

100) \emptyset

101) $\left\{-\frac{1}{6}, 9\right\}$

102) $\{4, 8\}$

103) $\{-2 - \sqrt{13}, -2 + \sqrt{13}\}$

104) $\left\{\frac{-5 - \sqrt{5}}{2}, \frac{-5 + \sqrt{5}}{2}\right\}$

105) $\left\{\frac{-2 - \sqrt{2}}{2}, \frac{-2 + \sqrt{2}}{2}\right\}$

106) -39 ; no real solution

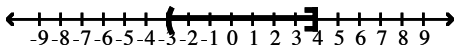
107) $\{4\}$

108) $\{11\}$

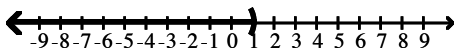
109) $\{6\}$

110) $\{9\}$

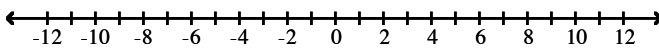
111) $\{x \mid -3 < x \leq 4\}$



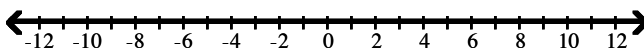
112) $\left\{x \mid x < \frac{6}{5}\right\}$



113) \emptyset



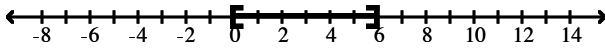
114) $(-\infty, \infty)$



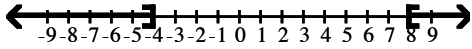
Answer Key

Testname: 260CH1P

115) $[0, 6]$



116) $(-\infty, -4] \cup [8, \infty)$



117) 0

118) $-\frac{9}{8}$

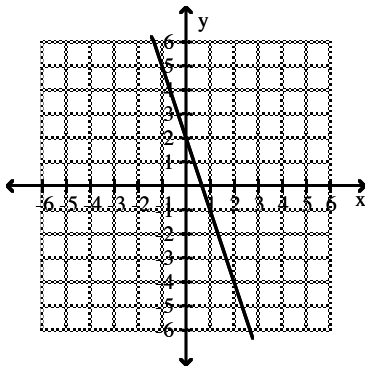
119) Undefined

120) $y = 2x + 16$

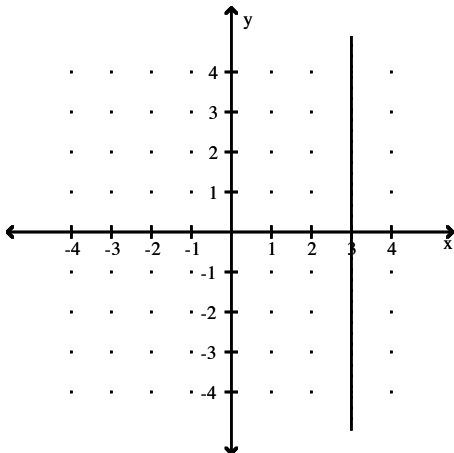
121) $y = \frac{3}{4}x + \frac{3}{4}$

122) $y = -\frac{1}{3}x + \frac{11}{3}$

123)



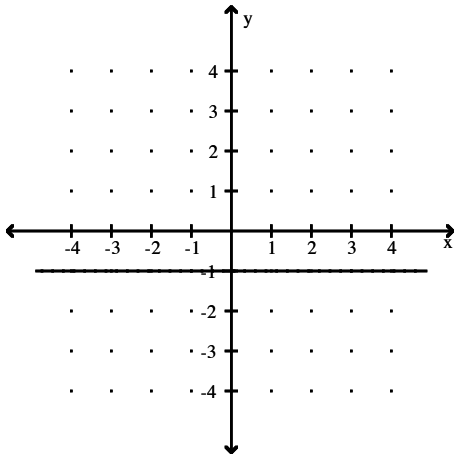
124)



Answer Key

Testname: 260CH1P

125)



126) $y = -\frac{1}{2}x + \frac{11}{2}$

127) $y - 3 = -2(x - 5)$

128) $y = -8x + 26$

129) $y = -\frac{1}{7}x + \frac{18}{7}$

130) $y = -\frac{1}{7}x + \frac{30}{7}$

131) $3\sqrt{10}$

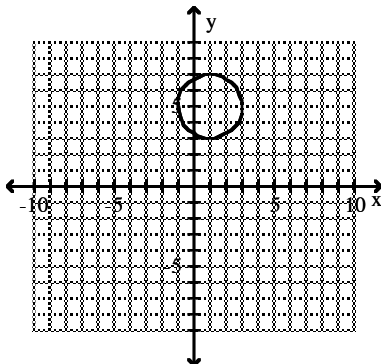
132) $2\sqrt{58}$

133) $(\frac{13}{2}, 8)$

134) $(\frac{-9\sqrt{7}}{2}, \frac{9\sqrt{2}}{2})$

135) $(8, -6), r = 8$

136)



Domain = $(-1, 3)$, Range = $(3, 7)$

137) $(x - 9)^2 + (y - 4)^2 = 25$

$(9, 4), r = 5$

138) $(x + 3)^2 + (y - 1)^2 = 36$

$(-3, 1), r = 6$