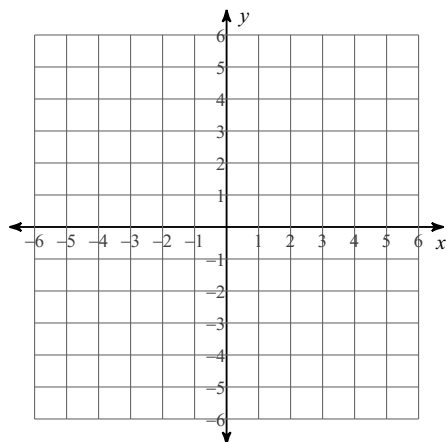


4th Quarter Study Guide

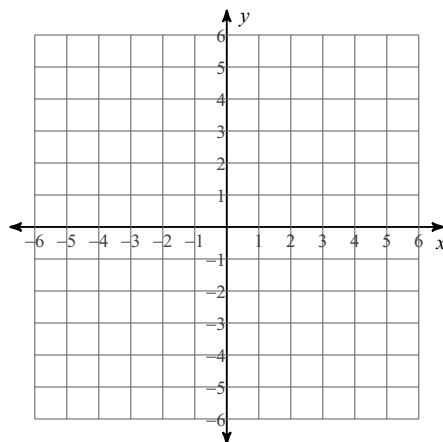
Date _____ Period _____

Sketch the graph of each line. (Notes - Section 5.3)

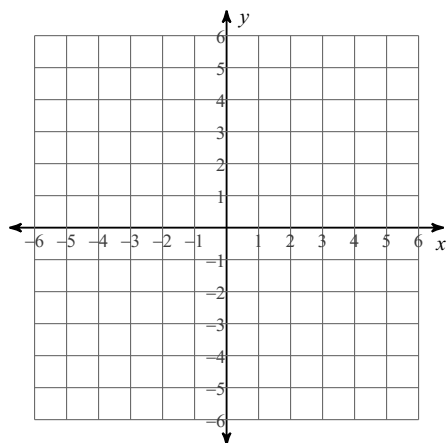
1) x -intercept = 5, y -intercept = 1



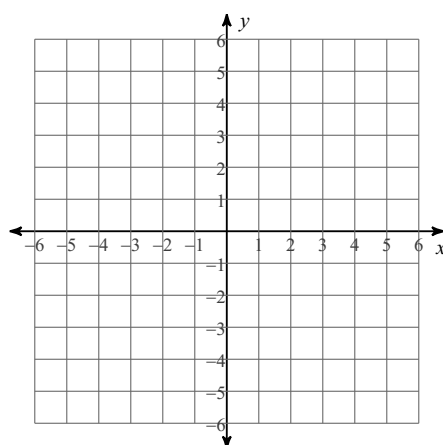
2) x -intercept = -2, y -intercept = 1



3) $x = 4$



4) $y = -\frac{2}{5}x - 3$

**Find the slope of the line through each pair of points. ($m = \frac{y_2 - y_1}{x_2 - x_1}$) (Notes - Section 5.3, 5.4)**

5) $(3, -1), (3, 10)$

6) $(5, 0), (-8, 2)$

Find the slope of each line. $y = mx + b$ (m = slope, b = y -int) (Notes Section - 5.3)

7) $y = -7x + 3$

8) $y = -3x + 4$

Write the slope-intercept form of the equation of the line through the given point with the given slope. (Notes - Section 5.4)

9) through: $(5, -4)$, slope $= -\frac{1}{2}$

10) through: $(-3, 4)$, slope $= -\frac{5}{3}$

Write the slope-intercept form of the equation of the line described. (Notes - Section 5.6)

11) through: $(-3, -1)$, parallel to $y = \frac{1}{3}x - 2$

12) through: $(2, 5)$, parallel to $y = \frac{9}{7}x - 3$

13) through: $(-1, 4)$, perp. to $y = \frac{1}{3}x - 4$

14) through: $(0, -4)$, perp. to $y = -4x + 4$

Solve each system by elimination. (Notes - Section 6.3)

15) $-2x - 7y = 30$
 $x + 7y = -29$

16) $-3x - y = 8$
 $-7x + 3y = -24$

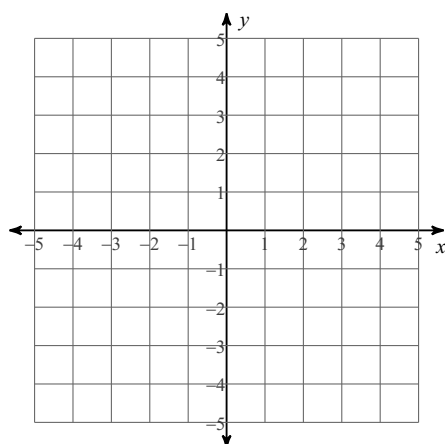
Solve each system by substitution. (Notes - Section 6.2)

17) $-7x + 3y = -23$
 $y = 5x - 13$

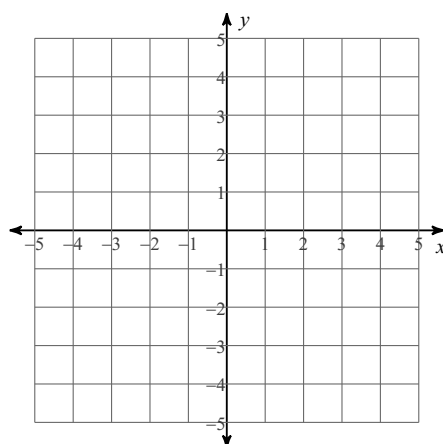
18) $5x + 2y = 11$
 $y = -7$

Solve each system by graphing. (Notes - Section 6.1)

19) $y = x + 3$
 $y = 6x - 2$



20) $y = -4x + 1$
 $y = -x - 2$



Simplify each expression. (Refer to examples in book - Section 7.1) *New Material

21) 10^{-2}

22) t^{-1}

23) $(-8ab)^0$

24) $(-8ab)^0$

25) 12^{-1}

26) 13^{-2}

27) $6ac^0$

28) $k^{-2}j^{-1}$

Simplify. Your answer should contain only positive exponents. (Refer to examples in book - Section 7.2/7.3) *New Material

29) $2 \cdot 2^3$

30) $3^{-4} \cdot 3^3 \cdot 3^2$

31) $4k^{-3} \cdot 3k^3$

32) $4a^0 \cdot a^4$

33) $4n^{-1} \cdot 3n^{-1}$

34) $x^{-4} \cdot 4x^2$

35) $r^0 \cdot 2r^{-3}$

36) $4x^3 \cdot 3x^2$

37) $2y^2 \cdot 3y^3$

38) $3x^3y^4 \cdot 4xy^3$

39) $(v^3)^3$

40) $(p^2)^{\frac{4}{3}}$

41) $(4m^4n^2)^4$

42) $(2yx^0)^{-2}$

43) $(y^0)^0$

44) $(4a^3b^{-3})^{-1}$

$$45) x^4 y^2 \cdot (2x^{-2} y^4)^2$$

$$46) (ab^4 \cdot a^{-4} b^2)^{-1}$$

$$47) (2xx^3)^{-4}$$

$$48) \frac{x^3}{2x^2}$$

$$49) \frac{x^3}{x^3}$$

$$50) \frac{2x^0}{3y^2}$$

$$51) \frac{3x^4 y^2}{3xy^4}$$

$$52) \frac{2x^{-2} y^{-3}}{x^4 y^3}$$

Write each expression in radical form. (Refer to examples in book - Section 7.5) *New Material

$$53) (5r)^{\frac{3}{2}}$$

$$54) 3p^{\frac{5}{2}}$$

$$55) (m^3)^{\frac{1}{4}}$$

$$56) (2n)^{\frac{5}{4}}$$

Write each expression in exponential form. (Refer to examples in book - Section 7.5) *New Material

$$57) \sqrt[5]{m^4}$$

$$58) \sqrt{3p^5}$$

$$59) 5\sqrt[6]{x^7}$$

$$60) \sqrt[n]{n}$$

Evaluate. (Refer to examples in book - Section 7.5) *New Material

61) $216^{\frac{1}{3}}$

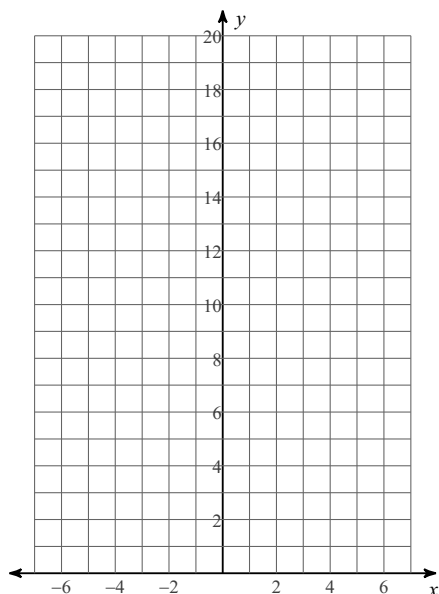
62) $8^{\frac{4}{3}}$

63) $32^{\frac{4}{5}}$

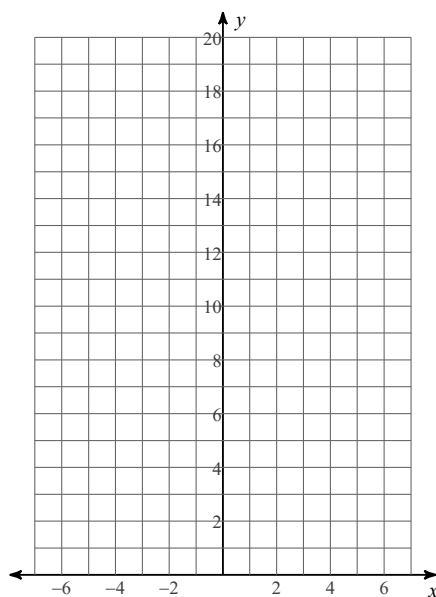
64) $625^{\frac{3}{4}}$

Sketch the graph of each function. (Refer to examples in book - Section 7.6) *New Material

65) $y = 4 \cdot 2^x$



66) $y = 3 \cdot \left(\frac{1}{2}\right)^x$



Evaluate each function. (Refer to examples in book - Section 7.6) *New Material

67) $k(x) = -3 \cdot 3^x$; Find $k(2)$

68) $w(x) = 4^{x-2}$; Find $w(1)$

Decide if the relation is linear or exponential. (Refer to examples in book - Section 7.6) *New Material

69) $y = 3x + 1$

70) $y = 3^x + 1$

Determine whether the function represents exponential growth or exponential decay. Identify the growth or decay factor. (Refer to examples in book - Section 7.7) *New Material

71) $y = 5.2 \cdot 3^x$

72) $y = 0.15 \cdot \left(\frac{2}{3}\right)^x$

$$73) y = 1.3 \cdot \left(\frac{5}{2}\right)^x$$

$$74) y = 7 \cdot 0.32^x$$

75) Carbon-14 has a half-life of 5,700 years. Scientists use this fact to determine the age of things made of organic material. Suppose the average book containing approximately 0.75 mg of carbon-14 is put into a time capsule. How much Carbon-14 will each page contain after 22,800 years?

76) Suppose the acreage of forest is decreasing by 2% per year because of development. If there are currently 4,500,000 acres of forest, determine the amount of forest land after 10 years.

77) A city of 2,950,000 people has a 2.5% annual increase in population. Determine the city's population in 15 years.

78) Suppose a new car is worth \$30,000 and depreciates 15% per year. Estimate the car's value after 4 years.

Find the degree of each monomial. (Refer to examples in book - Section 8.1) *New Material

$$79) -2r^4s^2$$

$$80) 6mn^7$$

$$81) -10n^5$$

$$82) a^3b^4c^2$$

Name each polynomial by degree and number of terms. (Refer to examples in book - Section 8.1) *New Material

$$83) -2 - 2n$$

$$84) -3 + 2x + 5x^2 + 4x^3$$

$$85) 4$$

$$86) -5x - 7x^5$$

Simplify each expression. Write the answer in standard form. (Refer to examples in book - Section 8.1) *New Material

$$87) n^2 - 3n - 7n^2 + 4n$$

$$88) 2x^4 - 7x + 7x + x^4$$

$$89) (7x + x^2) + (5x - 5x^2)$$

$$90) (4 + 6x^3) - (2x^3 + 6x)$$

$$91) (5 + 5n^4) + (2n^4 + 6 + n)$$

$$92) (5p^4 - 8) - (8 - p^4 - 3p)$$

Find each product. (Refer to examples in book - Section 8.2) *New Material

$$93) 5a(4a + 4b)$$

$$94) 8v^2(4u - 2v)$$

$$95) 4b(6a^2 - 3ab - 7b^2)$$

$$96) 8v^2(7u^2 + 4uv - 5v^2)$$

Identify each of the following as the square of a binomial or a difference of squares. Then find the product. (Refer to examples in book - Section 8.4) *New Material

$$97) (7a + 1)^2$$

$$98) (3n + 3)(3n - 3)$$

$$99) (2 + 6p)(2 - 6p)$$

$$100) (6r - 6)^2$$

Factor the common factor out of each expression. (Refer to examples in book - Section 8.4) *New Material

$$101) 48a + 56$$

$$102) -20k^3 - 36k^2$$

$$103) 18 - 63x^3$$

$$104) 12b^2a^2 - 4b^2$$

105) $60ab^3 + 6ab$

106) $28v^4 - 63v^3 - 63v$

Factor each completely. (Refer to examples in book - Section 8.5) *New Material

107) $x^2 - x - 30$

108) $b^2 - 3b - 4$

109) $x^2 + 16x + 60$

110) $n^2 + 10n + 16$

111) $p^2 - 16p + 60$

112) $a^2 - 16ab + 60b^2$

Factor each completely. Show all of your work for full credit. (Refer to examples in book - Section 8.6) *New Material

113) $7n^2 - 18n - 40$

114) $2r^2 - 19r - 10$

Factor each completely. (Refer to examples in book - Section 8.7 / 8.8) *New Material

115) $24b^3 + 28b^2 - 18b - 21$

116) $3x^3 - 2x^2 - 15x + 10$

117) $4n^2 + 12n + 9$

118) $16b^2 - 8b + 1$

$$119) 25n^2 - 9$$

$$120) 16a^2 - 25$$

Simplify. (Refer to examples in book - Section 10.2 / 10.3) *New Material

$$121) \sqrt{125}$$

$$122) \sqrt{252}$$

$$123) 8\sqrt{45}$$

$$124) \sqrt{147m^2}$$

$$125) \sqrt{63r^3}$$

$$126) \sqrt{18xy^3}$$

$$127) \sqrt{48x^4yz^2}$$

$$128) \sqrt{6} \cdot \sqrt{3}$$

$$129) \sqrt{15} \cdot \sqrt{6}$$

$$130) \sqrt{15m} \cdot \sqrt{15m^2}$$

$$131) \sqrt{6x^2} \cdot \sqrt{15x^3}$$

$$132) 2\sqrt{15} \cdot 5\sqrt{25}$$

$$133) 4\sqrt{5} \cdot -4\sqrt{20}$$

$$134) 2\sqrt{5x^2} \cdot -5\sqrt{5x^3}$$

$$135) \frac{\sqrt{8}}{\sqrt{4}}$$

$$136) \frac{\sqrt{10}}{\sqrt{5}}$$

$$137) \frac{4a^2}{\sqrt{3a}}$$

$$138) \sqrt{3} + \sqrt{3}$$

$$139) \sqrt{10}(\sqrt{2} + 3)$$

$$140) (\sqrt{3} + 2)(\sqrt{3} - 2)$$

Solve each equation. Remember to check for extraneous solutions. (Refer to examples in book - Section 10.4) *New Material

$$141) \sqrt{k-1} = 10$$

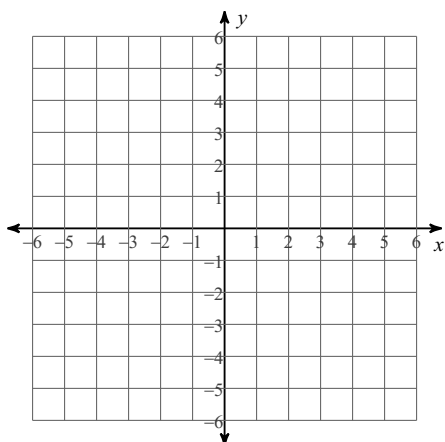
$$142) \sqrt{25x} = 10$$

$$143) -80 = -10\sqrt{v+1}$$

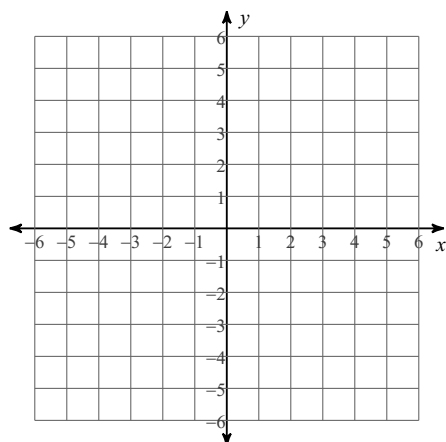
$$144) \sqrt{16-m} = 3$$

Graph each equation. (Notes 5.8) *Old Material

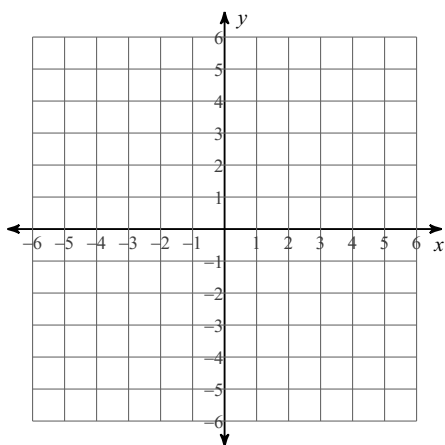
145) $y = |x| - 3$



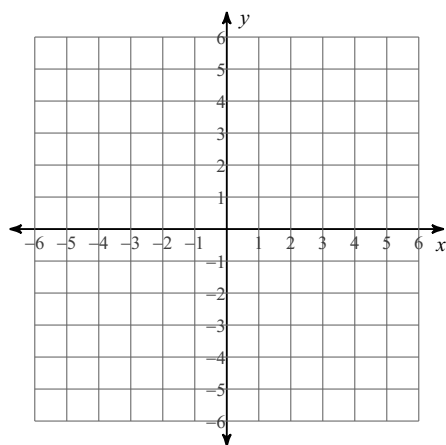
146) $y = |x| + 2$



147) $y = -|x - 2| - 2$

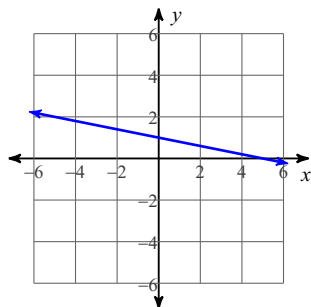


148) $y = -|x| + 2$

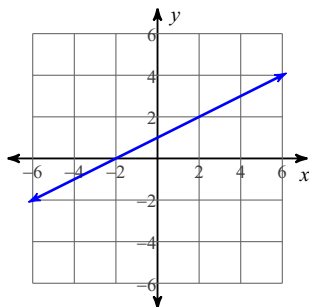


Answers to 4th Quarter Study Guide (ID: 1)

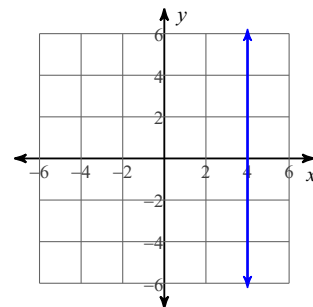
1)



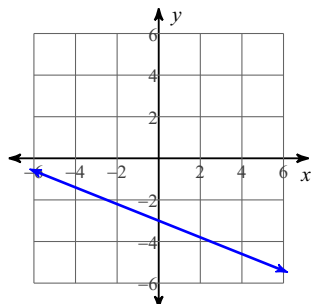
2)



3)



4)



5) Undefined

6) $-\frac{2}{13}$

7) -7

8) -3

9) $y = -\frac{1}{2}x - \frac{3}{2}$

10) $y = -\frac{5}{3}x - 1$

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

12) $y = \frac{9}{7}x + \frac{17}{7}$

13) $y = -3x + 1$

14) $y = \frac{1}{4}x - 4$

15) $(-1, -4)$

16) $(0, -8)$

17) $(2, -3)$

18) $(5, -7)$

19) $(1, 4)$

20) $(1, -3)$

21) $1/100$

22) $1/t$

23) 1

24) 1

25) $1/12$

26) $1/169$

27) $6a$

28) $1/kj$

29) 2^4

30) 3

31) 12

32) $4a^4$

33) $\frac{12}{n^2}$

34) $\frac{4}{x^2}$

35) $\frac{2}{r^3}$

36) $12x^5$

37) $6y^5$

38) $12x^4y^7$

39) v^9

40) $p^{\frac{8}{3}}$

41) $256m^{16}n^8$

42) $\frac{1}{4y^2}$

43) 1

44) $\frac{b^3}{4a^3}$

45) $4y^{10}$

46) $\frac{a^3}{b^6}$

47) $\frac{1}{16x^{16}}$

48) $\frac{x}{2}$

49) 1

50) $\frac{2}{3y^2}$

51) $\frac{x^3}{y^2}$

52) $\frac{2}{x^6y^6}$

53) $(\sqrt{5r})^3$

54) $(\sqrt{3p})^5$

55) $\sqrt[4]{m^3}$

56) $(\sqrt[4]{2n})^5$

57) $m^{\frac{4}{5}}$

58) $(3p)^{\frac{5}{2}}$

59) $x^{\frac{7}{6}}$

60) $n^{\frac{1}{2}}$

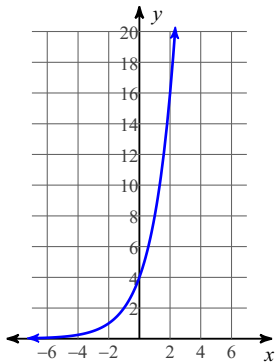
61) 6

62) 16

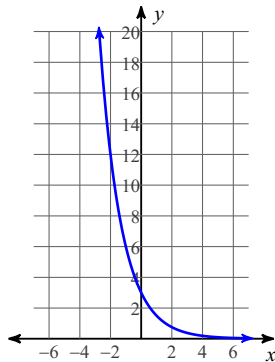
63) 16

64) 125

65)



66)

67) -27 68) $\frac{1}{4}$

69) linear

70) exponential

71) exponential growth

72) exponential decay

73) exponential growth

74) exponential decay

75)

76)

77)

78)

79) fourth degree monomial

80) seventh degree monomial

81) fifth degree monomial

82) cubic monomial

83) linear binomial

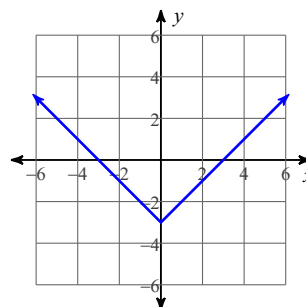
84) cubic polynomial with four terms

85) constant monomial

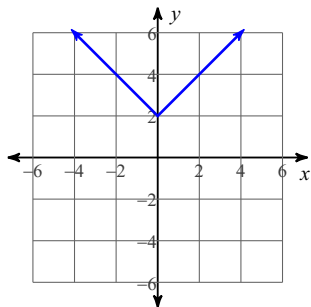
86) fifth degree binomial

87) $-6n^2 + n$ 88) $3x^4$ 89) $-4x^2 + 12x$ 90) $4x^3 - 6x + 4$ 91) $7n^4 + n + 11$ 92) $6p^4 + 3p - 16$ 93) $20a^2 + 20ab$ 94) $32v^2u - 16v^3$ 95) $24ba^2 - 12b^2a - 28b^3$ 96) $56v^2u^2 + 32v^3u - 40v^4$ 97) $49a^2 + 14a + 1$ 98) $9n^2 - 9$ 99) $4 - 36p^2$ 100) $36r^2 - 72r + 36$ 101) $8(6a + 7)$ 102) $-4k^2(5k + 9)$ 103) $9(2 - 7x^3)$ 104) $4b^2(3a^2 - 1)$ 105) $6ab(10b^2 + 1)$ 106) $7v(4v^3 - 9v^2 - 9)$ 107) $(x + 5)(x - 6)$ 108) $(b + 1)(b - 4)$ 109) $(x + 10)(x + 6)$ 110) $(n + 2)(n + 8)$ 111) $(p - 10)(p - 6)$ 112) $(a - 10b)(a - 6b)$ 113) $(7n + 10)(n - 4)$ 114) $(2r + 1)(r - 10)$ 115) $(4b^2 - 3)(6b + 7)$ 116) $(x^2 - 5)(3x - 2)$ 117) $(2n + 3)^2$ 118) $(4b - 1)^2$ 119) $(5n + 3)(5n - 3)$ 120) $(4a + 5)(4a - 5)$ 121) $5\sqrt{5}$ 122) $6\sqrt{7}$ 123) $24\sqrt{5}$ 124) $7m\sqrt{3}$ 125) $3r\sqrt{7r}$ 126) $3y\sqrt{2xy}$ 127) $4x^2z\sqrt{3y}$ 128) $3\sqrt{2}$ 129) $3\sqrt{10}$ 130) $15m\sqrt{m}$ 131) $3x^2\sqrt{10x}$ 132) $50\sqrt{15}$ 133) -160 134) $-50x^2\sqrt{x}$ 135) $\sqrt{2}$ 136) $\sqrt{2}$ 137) $\frac{4a\sqrt{3a}}{3}$ 138) $2\sqrt{3}$ 139) $2\sqrt{5} + 3\sqrt{10}$ 140) -1 141) $\{101\}$ 142) $\{4\}$ 143) $\{63\}$ 144) $\{7\}$

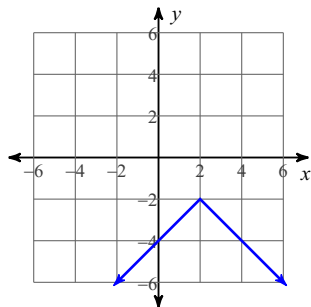
145)



146)



147)



148)

