

Summer Packet: Algebra 2 (Part 1)

Solve each equation. (Multi-step Equations, Linear and Absolute Value)

1) $-7x + 7(-4x + 7) = 6 + 8x$

2) $-34 + 8p = -6 + 6(5p - 1)$

3) $-16 + 3x = 4 + 2(2x - 7)$

4) $5(6v + 7) = 4v - 17$

5) $-31 + 3x = -(-8x + 1)$

6) $5n - 30 = -6(5n + 5)$

7) $-14 - 4r = 6(1 - 4r)$

8) $2(2v + 2) = -28 + 8v$

9) $-9\left|\frac{v}{10}\right| = -9$

10) $|b + 6| + 4 = 8$

11) $|6 + b| - 10 = -4$

12) $-7|n - 6| = -84$

13) $9 - |5a - 3| = -4$

14) $2|6x + 3| - 2 = 40$

Solve each equation for the indicated variable. (Literal Equations)

15) $u = a - k$, for a

16) $u = ka$, for a

17) $z = x - m$, for x

18) $u = \frac{a}{k}$, for a

19) $g = \frac{c - x}{x}$, for x

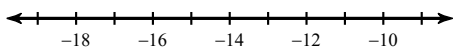
20) $g = \frac{c - a}{a}$, for a

21) $x - k = xu$, for x

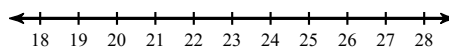
22) $g = \frac{x + c}{x}$, for x

Solve each inequality and graph its solution. (Solving and Graphing Inequalities in One-Variable)

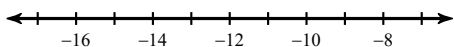
23) $\frac{9 + b}{6} < -1$



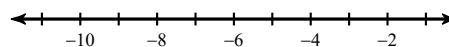
24) $\frac{x}{2} - 9 > 1$



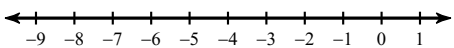
25) $-1 \geq \frac{a + 5}{10}$



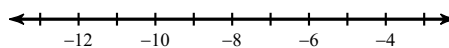
26) $\frac{x + 2}{2} < -3$



27) $50 > -5(b - 5)$



28) $-1 \leq \frac{-3 + r}{10}$



Solve each proportion. (Solving Proportions)

29) $\frac{x + 4}{5} = \frac{6}{9}$

30) $\frac{9}{5} = \frac{n - 6}{7}$

31) $\frac{b - 5}{7} = \frac{7}{6}$

32) $\frac{8}{4} = \frac{b + 7}{8}$

Each set of ordered pairs represents a relation. Determine the domain/range and if the relation is a function. (Functions, Domain and Range)

33) $\{(-3, -5), (-2, 5), (0, 7), (3, 4), (5, 1)\}$

34) $\{(-2, -1), (-2, -5), (2, -7), (5, -1), (5, 7)\}$

Each table represents a relation. Determine the domain/range and if the relation is a function.

35)

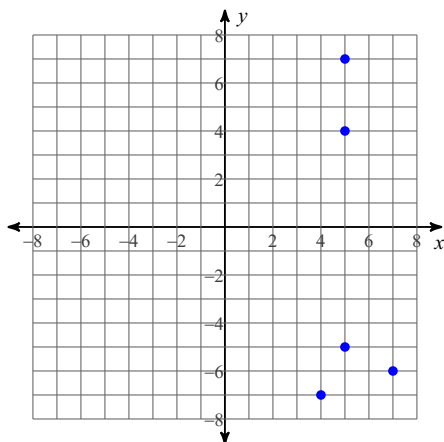
x	y
-6	4
-5	-2
-4	-6
-3	0
1	2

36)

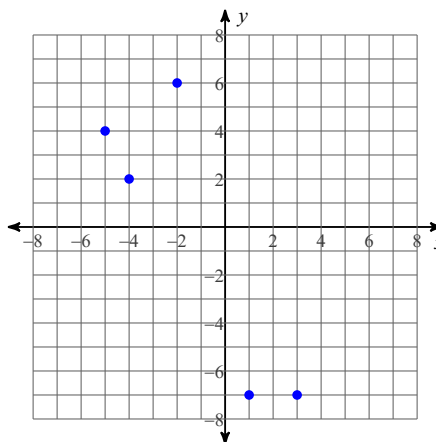
x	y
-6	7
0	-3
1	6
4	-4
4	6

Each graph represents a relation. Determine the domain/range and if the relation is a function.

37)

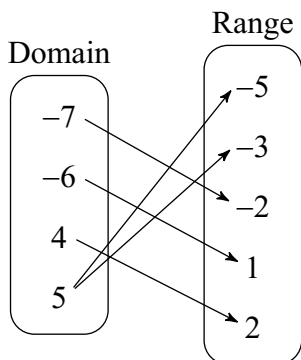


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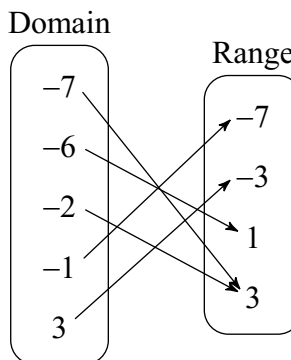


Each mapping diagram represents a relation. Determine the domain/range and if the relation is a function.

39)

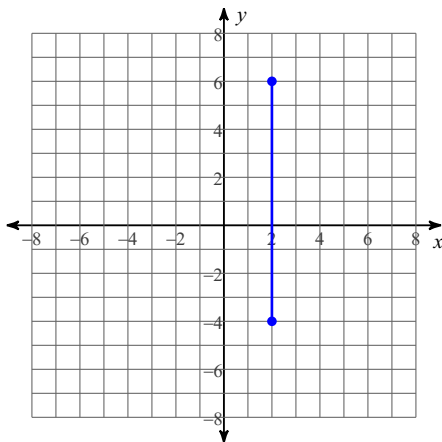


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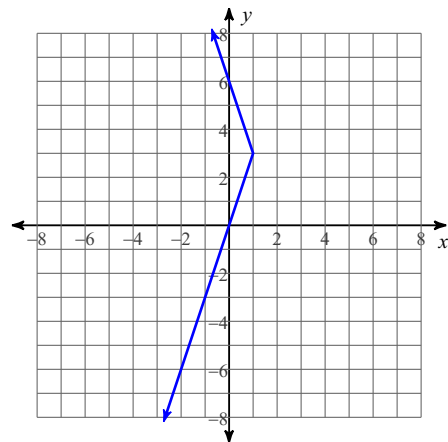


Each graph represents a relation. Determine if the relation is a function. Then find the domain and range.

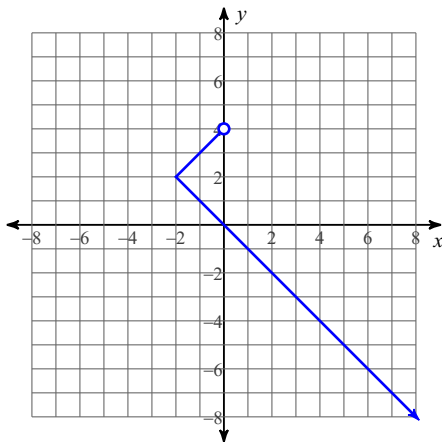
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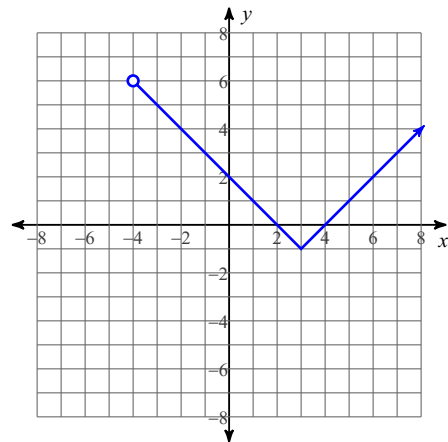
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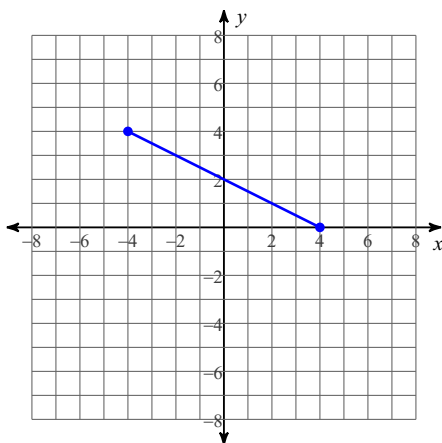
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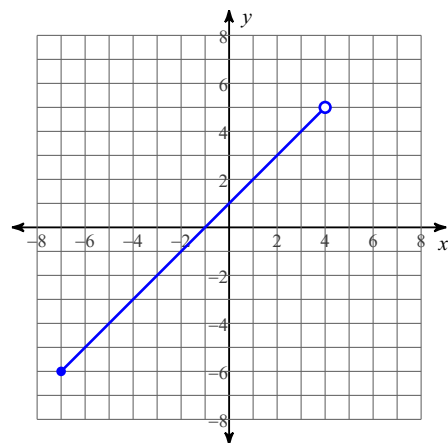
44)



45)



46)



Evaluate each function for the given value. (Evaluating Functions)

47) $f(x) = x^2 + 6x + 5$; Find $f(-3)$

48) $f(x) = 2x + 2$; Find $f(0)$

49) $f(x) = -|x - 5| + 2$; Find $f(9)$

50) $f(x) = -3x + 5$; Find $f(3)$

51) $f(x) = -x^2 + 2x$; Find $f(1)$

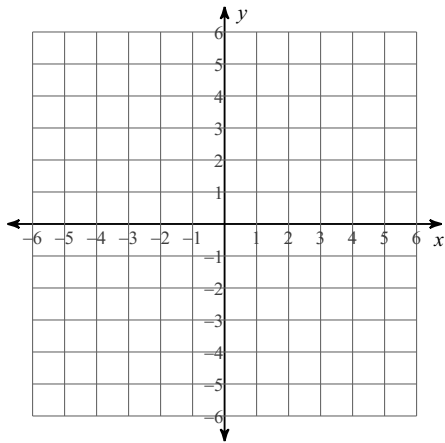
52) $f(x) = 3x + 3$; Find $f(2)$

53) $f(x) = -x^2 - 6x - 5$; Find $f(-1)$

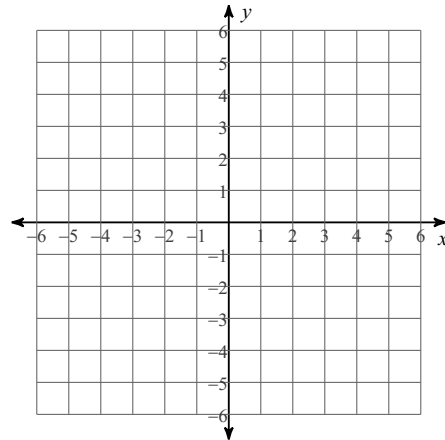
54) $f(x) = -x^2 - 4x - 3$; Find $f(0)$

Sketch the graph of each line. (Graphing Linear Equations, Slope-Intercept Form)

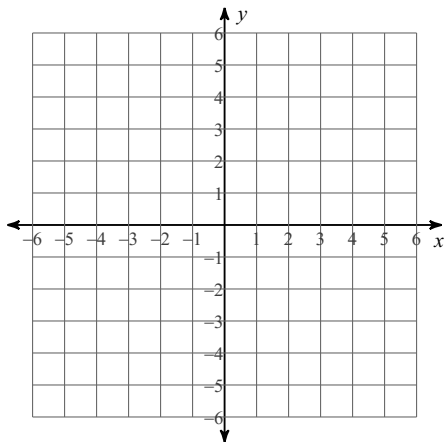
55) $y = -\frac{8}{5}x + 4$



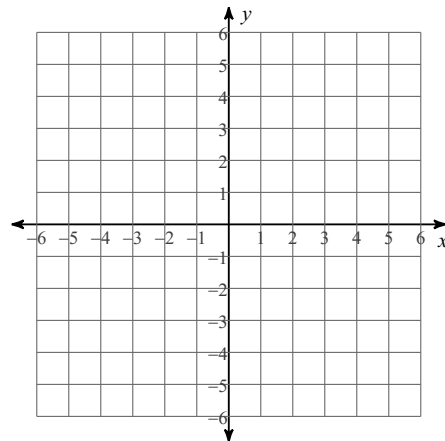
56) $y = -4x - 3$



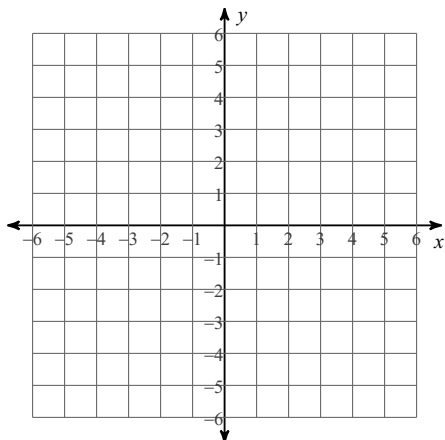
57) $y = \frac{1}{2}x + 5$



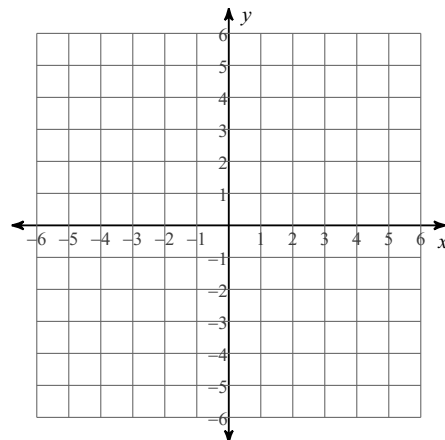
58) $y = x + 2$



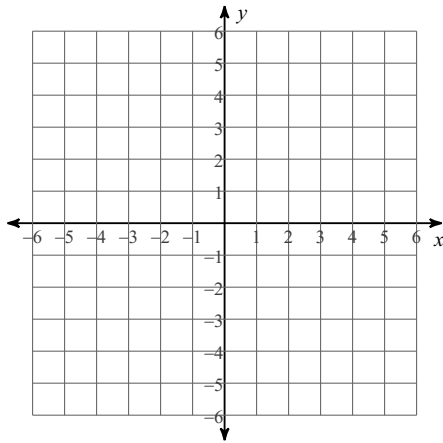
59) $2x - y = 4$



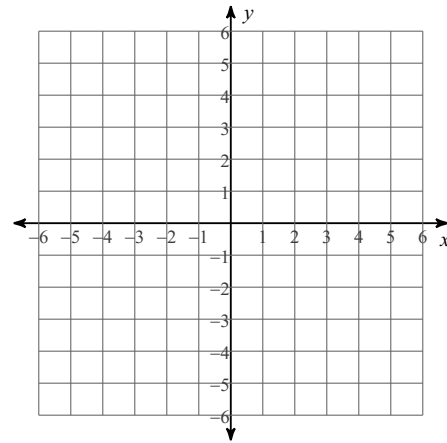
60) $x + 2y = 6$



61) $7x - 3y = 9$



62) $x - y = -3$



Find the slope of the line through each pair of points. (Calculating the slope of a line given two points)

63) $(-8, -15), (-11, 15)$

64) $(-20, -7), (-11, -6)$

65) $(4, -15), (7, 5)$

66) $(17, 18), (-15, 19)$

Write the slope-intercept form of the equation of the line through the given point with the given slope. (Calculating slope of a line given a point and a slope)

67) through: $(-1, 1)$, slope = -2

68) through: $(1, 5)$, slope = 1

69) through: $(1, 5)$, slope = $\frac{3}{5}$

70) through: $(3, 5)$, slope = $\frac{7}{3}$

Write the slope-intercept form of the equation of the line through the given points. (Calculating the slope of a line given two points)

71) through: $(0, 3)$ and $(4, 5)$

72) through: $(-3, 3)$ and $(-2, 5)$

73) through: $(0, 0)$ and $(-2, 4)$

74) through: $(1, -2)$ and $(4, -4)$

Write the slope-intercept form of the equation of the line described. (Writing in Slope-intercept form, Parallel or Perpendicular)

75) through: $(3, 5)$, parallel to $y = 3x + 5$

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

77) through: $(2, 4)$, parallel to $y = 2x - 2$

78) through: $(4, 0)$, parallel to $y = -\frac{1}{4}x - 3$

79) through: $(2, 0)$, perp. to $y = -\frac{2}{5}x - 1$

80) through: $(-4, 1)$, perp. to $y = -\frac{1}{3}x + 2$

81) through: $(-1, 5)$, perp. to $y = \frac{1}{9}x - 5$

82) through: $(-3, 2)$, perp. to $y = -\frac{1}{5}x$

Solve each system by elimination. (Solving Linear Systems by elimination)

83) $3x + 7y = -28$
 $-10x - 7y = -21$

84) $-6x + 3y = 15$
 $x - 3y = 10$

85) $4x - 6y = -4$
 $-4x - 7y = -22$

86) $x + y = -7$
 $-x - y = 2$

87) $-5x - 10y = 5$
 $-10x - 10y = 20$

88) $4x + 4y = 8$
 $7x + 4y = 17$

$$89) \begin{cases} -4x + 5y = -14 \\ 6x + 5y = -4 \end{cases}$$

$$90) \begin{cases} 4x - 4y = -24 \\ 4x + 10y = 4 \end{cases}$$

$$91) \begin{cases} 6x + 14y = 8 \\ 2x + 7y = -2 \end{cases}$$

$$92) \begin{cases} 10x - 5y = 5 \\ -5x - 2y = -7 \end{cases}$$

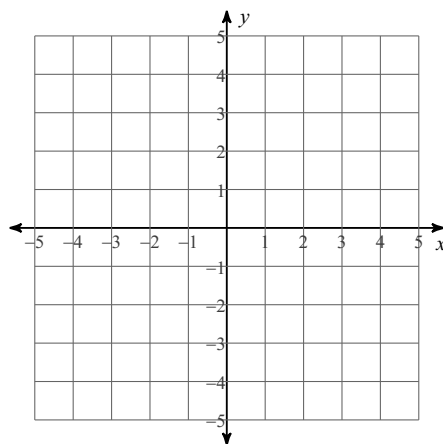
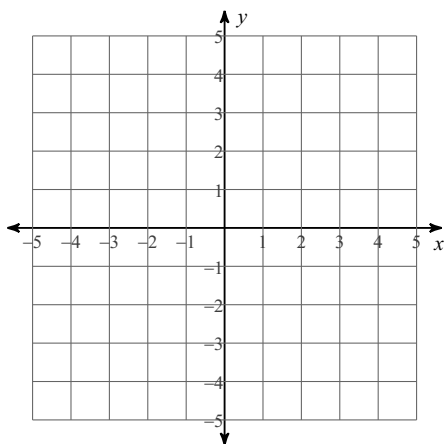
$$93) \begin{cases} -5x + 5y = -15 \\ -x - y = 11 \end{cases}$$

$$94) \begin{cases} 10x + 2y = -26 \\ 20x - 10y = -10 \end{cases}$$

Solve each system by graphing. (Solving Linear Systems by graphing)

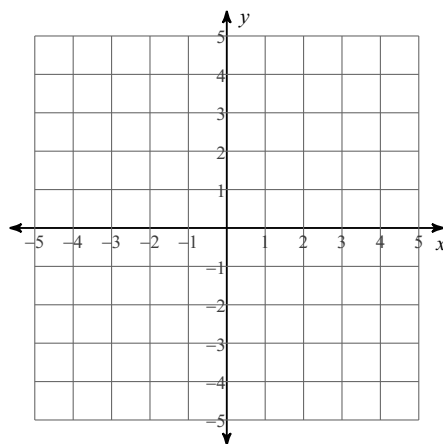
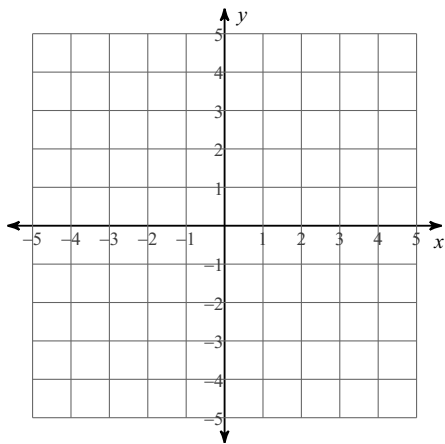
$$95) \begin{cases} y = -\frac{5}{3}x + 4 \\ y = \frac{2}{3}x - 3 \end{cases}$$

$$96) \begin{cases} y = \frac{2}{3}x + 3 \\ y = -\frac{4}{3}x - 3 \end{cases}$$

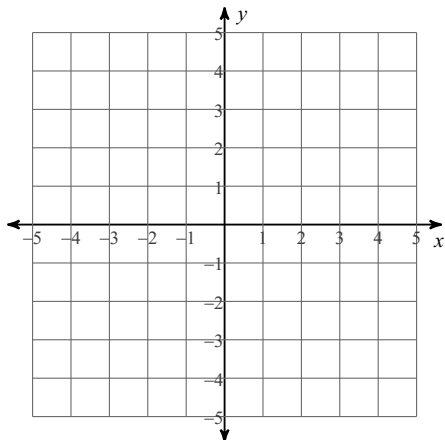


$$97) \begin{cases} y = -5x - 2 \\ y = -x + 2 \end{cases}$$

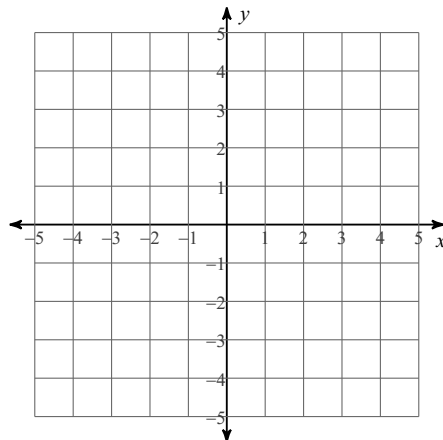
$$98) \begin{cases} y = \frac{1}{4}x - 1 \\ y = x + 2 \end{cases}$$



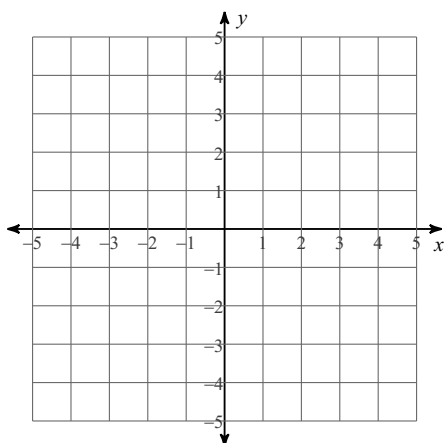
99) $x + 3y = 6$
 $4x - 3y = 9$



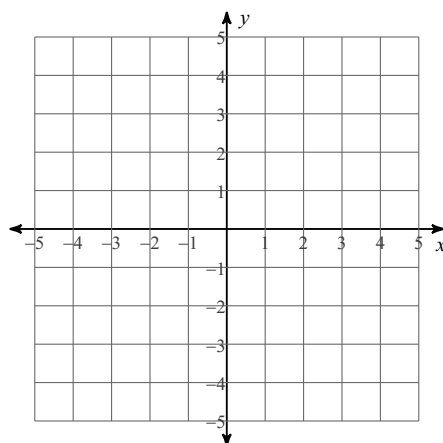
100) $5x + 2y = -4$
 $x + 2y = 4$



101) $3x + y = -4$
 $3x - y = -2$

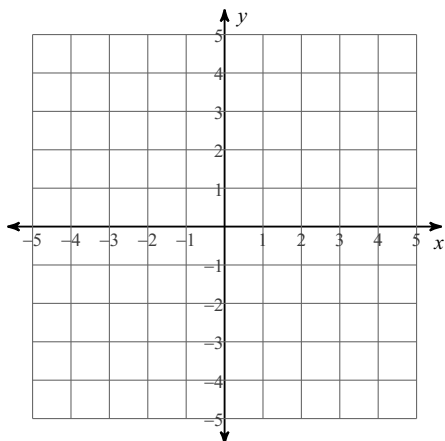


102) $x - 3y = 9$
 $x + y = 1$



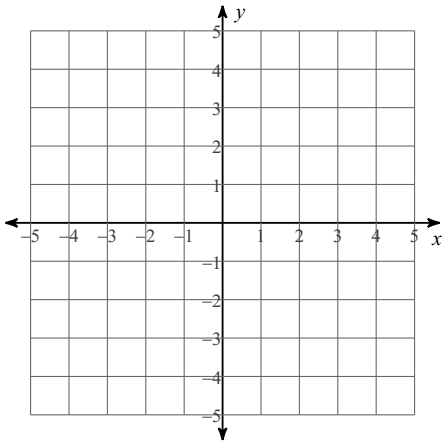
Sketch the solution to each system of inequalities. (Solving Linear Systems of Inequalities)

103) $y \geq 3x - 1$
 $y > -x + 3$



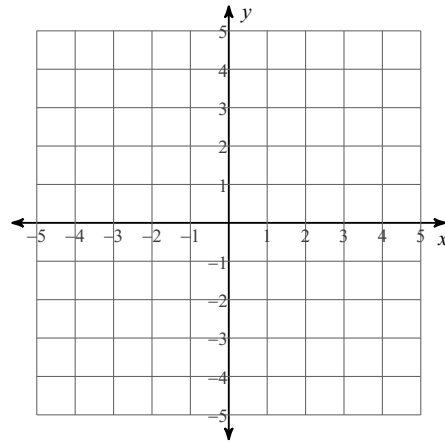
$$104) \ y < \frac{1}{2}x - 2$$

$$x \leq 2$$



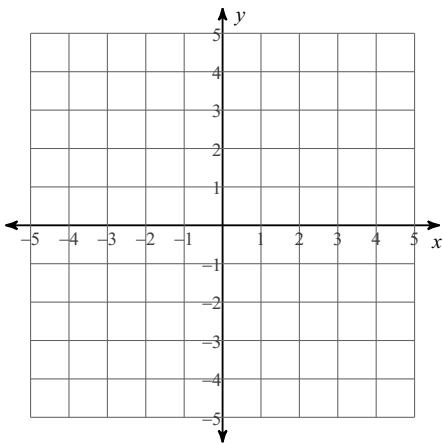
$$105) \ y \leq \frac{1}{3}x - 2$$

$$y \leq 2x + 3$$



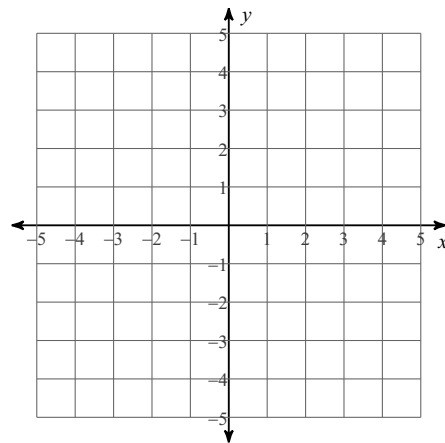
$$106) \ y > x - 1$$

$$y > 4x + 2$$



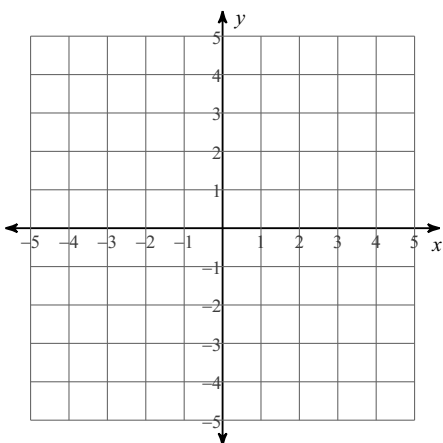
$$107) \ x > -3$$

$$x - 3y \geq -6$$



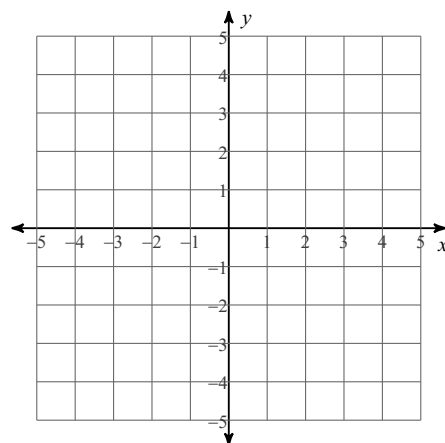
$$108) \ 4x + 3y \leq 6$$

$$x \geq 3$$

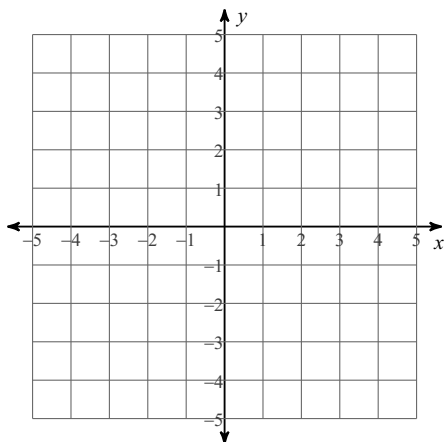


$$109) \ x + y \geq 2$$

$$4x + y > -1$$



$$110) \begin{cases} 4x + y > -3 \\ x - y \geq -2 \end{cases}$$



Simplify. Your answer should contain only positive exponents. (Simplifying exponential expressions)

$$111) (-2m^4n^2p^4 \cdot m^3p^3)^3$$

$$112) (-a^3 \cdot a^4b^3c^3)^2$$

$$113) (-rq^3 \cdot -p^3q^4r^2)^3$$

$$114) (-x^4y^4)^2 \cdot -2xz^3$$

$$115) 2c \cdot (-a^3b^4c^2)^4$$

$$116) -pr^2 \cdot (2rp^2q^4)^2$$

$$117) (abc)^4 \cdot (-2a^3b^4c^2)^2$$

$$118) x^4y^2z^2 \cdot (-zx^2y^2 \cdot -xy^3z^3)^2$$

$$119) \frac{4xyz^3}{-3y \cdot -3yzx^4}$$

$$120) \frac{-4m^4q^4 \cdot 2m^2p^2q^2}{-4m^4q^3}$$

$$121) \frac{4x^4y^4z^2 \cdot 2x^2y^3}{-2x^4y^4z^4}$$

$$122) -\frac{2xy^2z^2}{2x^4y^3z^4 \cdot -2yzx^3}$$

$$123) \frac{xy^3 \cdot 4yzx^3}{-4x^2z^2}$$

$$124) \frac{2m \cdot -4n^2p^4}{-3m^4p^4}$$

$$125) \frac{4h^3j^3k^4 \cdot -j^2k^2}{-3h^2j^2}$$

$$126) \frac{2x^4y^3 \cdot -xy^3z^3}{4x^4y^4}$$

Simplify each expression. (Adding and Subtracting expressions with exponents)

$$127) (4 + x^3 + 6x) + (6x^3 - 8 + 7x^2)$$

$$128) (n^3 + 7n^2 - 4n^4) - (6n^3 + 3n^4 - 3)$$

$$129) (7 - 8n^4 + 7n^3) - (3n^3 - 5n^4 + 1)$$

$$130) (6b^4 + 6b^3 + 3b) + (5b^3 - 4b - 8b^4)$$

$$131) (5 + 6n + 6n^4) + (2 + 6n - 6n^4)$$

$$132) (8k^3 + 1 - 7k^2) + (8 - 8k^2 - k^3)$$

$$133) (7n^3 + 8n^2 - n^4) - (n^3 - 3n - 8n^4 + 6n^2)$$

$$134) (1 + 4a - 8a^4) + (3a^3 - 7 + 4a^4 - 4a)$$

$$135) (7x^3 - 5 + x^2) - (4x^3 + 4x^2 + 3x - 7)$$

$$136) (3 - 6n^2 + n) - (8 + 2n^2 - 5n + 5n^3)$$

$$137) (4 - 5m^3 + 4m) + (8m^3 - 6 + 5m^2 + 8m)$$

$$138) (5a^3 - 8a^2 + 6) - (4a + 6a^2 + a^3 - 4)$$

$$139) (7b^4 - 5b^3 - 6b) - (4b^3 - 6b - 3b^4 - 7) - (7b + b^4)$$

$$140) (6n + 3 - 5n^3) - (3n^3 - 7n^4 + 6 + 6n) - (8n^2 + 6)$$

$$141) (3 - 8b^3 + b^2) - (7b^3 + 3b^4 - 2 + 4b^2) + (7b - 3b^2)$$

$$142) (4n^3 + 6 - 2n^4) - (2n^4 + 6 + 4n + 2n^3) + (3 + 4n)$$

$$143) (7 + 3k^2 + 7k^3) - (5 - 3k - k^2 + 6k^3) - (5k^3 + 7k)$$

$$144) (3 + 7x^2 - 5x^4) + (4x^3 - 7x^2 + 8x^4 + 2) + (7x^3 + 4x^2)$$

Find each product. (Multiplying binomials with binomials or trinomials)

145) $(3n - 4)(4n + 7)$

146) $(7v - 4)(5v - 7)$

147) $(4p - 7)(2p + 5)$

148) $(6n + 3)(5n - 2)$

149) $(6n + 6)(5n + 7)$

150) $(8x - 1)(x + 6)$

151) $(7x + 4)(8x^2 + 3x + 6)$

152) $(x + 7)(2x^2 + 3x + 2)$

153) $(k - 7)(6k^2 + k - 7)$

154) $(3n + 5)(4n^2 - 8n - 2)$

155) $(8x + 2)(6x^2 - 5x - 7)$

156) $(4k - 5)(6k^2 - 3k + 1)$

Factor each completely. (Factoring Quadratic Expressions)

157) $x^2 + 10x + 21$

158) $x^2 - 15x + 56$

159) $v^2 - 3v - 10$

160) $k^2 + 2k$

161) $n^2 + 5n$

162) $k^2 + 6k - 16$

163) $5x^2 + 10x - 120$

164) $2a^2 - 20a + 42$

165) $2x^2 - 10x + 8$

166) $6r^2 + 60r$

167) $5n^2 - 50n$

168) $2x^2 + 2x - 40$

169) $3b^2 + 4b$

170) $5n^2 - 2n$

171) $3b^2 - 7b - 6$

172) $5a^2 - 17a + 6$

173) $3x^2 - 4x$

174) $5m^2 - 18m - 8$

175) $10b^2 - 34b + 12$

176) $6n^2 - 10n - 4$

177) $4n^2 - 2n - 20$

178) $15n^2 + 12n - 3$

179) $10r^2 - 18r + 8$

180) $6x^2 + 9x$

181) $4v^2 + 8v + 3$

182) $4n^2 + 8n - 5$

183) $4x^2 - 13x + 10$

184) $4n^2 - 9$

185) $4n^2 - 4n$

186) $4p^2 + 20p$

187) $8x^2 + 6x - 2$

188) $12x^2 - 15x + 3$

189) $12b^2 - 60b$

190) $12r^2 + 63r + 15$

191) $8r^2 - 46r + 30$

192) $8p^2 - 26p + 20$

193) $x^2 - 9$

194) $25b^2 - 16$

195) $n^2 - 4$

196) $9x^2 - 16$

197) $9p^2 - 1$

198) $9b^2 - 25$

199) $m^2 - 1$

200) $4n^2 - 1$

201) $9k^3 - 6k^2 + 3k - 2$

202) $4p^3 + 6p^2 + 2p + 3$

203) $9x^3 + 3x^2 + 3x + 1$

204) $3n^3 + 3n^2 + n + 1$

205) $6n^3 + 9n^2 + 4n + 6$

206) $2n^3 - 3n^2 + 6n - 9$

207) $2n^3 - 3n^2 - 4n + 6$

208) $4n^3 - 6n^2 - 6n + 9$

209) $2bc + 3bd - 4xc - 6xd$

210) $2az - 2ac + xz - xc$

211) $m^2c + 2m^2f + nc + 2nf$

212) $3pw - 3pf - qw + qf$

Solve each equation by taking square roots. (Solving Quadratic Equations Method: Taking Square Roots)

213) $n^2 = 36$

214) $p^2 = 49$

215) $n^2 = 25$

217) $6x^2 = 6$

219) $p^2 + 8 = 12$

221) $10n^2 + 4 = 494$

223) $6x^2 - 4 = 212$

216) $a^2 = 50$

218) $-4a^2 = -144$

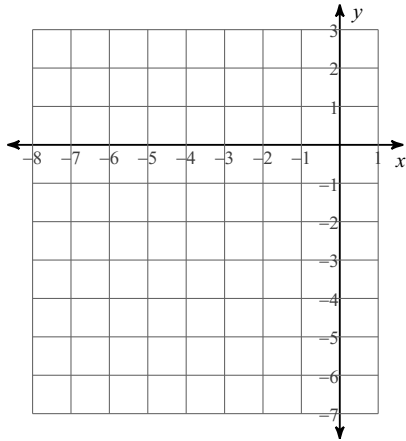
220) $3x^2 = -135$

222) $3v^2 + 7 = 34$

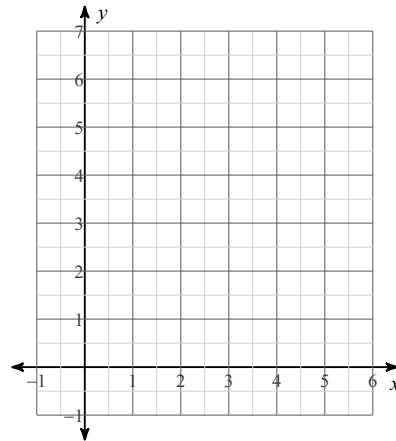
224) $49a^2 + 3 = 39$

Sketch the graph of each function. (Graphing Quadratic Functions)

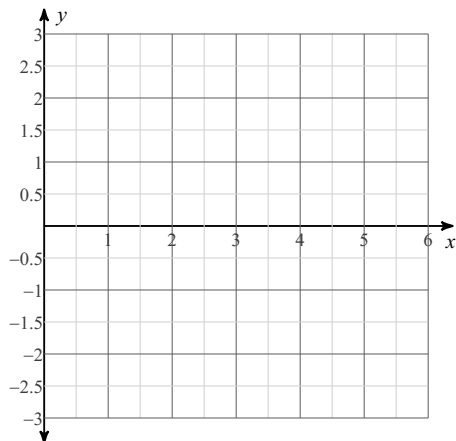
225) $y = -2(x + 4)^2 + 2$



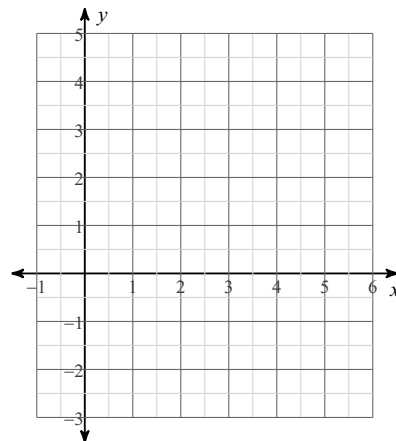
226) $y = \frac{1}{2}(x - 4)^2 + 3$



227) $y = -(x - 3)^2 + 2$



228) $y = -(x - 4)^2 + 3$



Solve each equation by factoring. (Solving Quadratic Equations Method: By Factoring)

229) $k^2 + 12k + 36 = 4$

230) $x^2 - 5x + 9 = 5$

231) $x^2 + 7x + 19 = 7$

232) $x^2 + 3x - 42 = -2$

Solve each equation with the quadratic formula. (Solving Quadratic Equations Method: Using the Quadratic Formula)

233) $x^2 - 9 = 0$

234) $x^2 - 1 = 0$

235) $b^2 + 2b - 8 = 0$

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

237) $b^2 - 3b - 6 = 0$

238) $-n^2 - n + 3 = 0$

239) $2v^2 - 5 = 0$

240) $-x^2 + x + 1 = 0$

241) $x^2 - 6 = -x$

242) $-3k^2 + 3k = -5$

243) $0 = -x^2 + 9$

244) $0 = -1 + 3x^2$

Solve each equation by completing the square. (Solving Quadratic Equations Method: Completing the Square)

$$245) a^2 + 18a - 42 = -2$$

$$247) x^2 - 16x + 7 = -8$$

$$249) 3a^2 + 18a + 21 = -3$$

$$251) 9b^2 + 18b - 58 = -3$$

$$246) x^2 + 10x - 22 = 2$$

$$248) v^2 + 6v - 47 = -7$$

$$250) 7n^2 - 14n - 15 = 6$$

$$252) 2x^2 + 12x - 46 = 9$$

Simplify. (Simplifying Radical Expressions)

$$253) \sqrt{75k^2}$$

$$255) \sqrt{8x}$$

$$257) \sqrt{100n^2}$$

$$259) -2\sqrt{32xy^2}$$

$$261) 5\sqrt{12a^2b}$$

$$263) 5\sqrt{36uv}$$

$$265) -2\sqrt{5} - 2\sqrt{20} + 2\sqrt{5}$$

$$267) -2\sqrt{8} + 2\sqrt{20} - \sqrt{2}$$

$$269) -2\sqrt{24} + 3\sqrt{2} - 3\sqrt{18}$$

$$271) -\sqrt{6} - 2\sqrt{20} + 3\sqrt{54}$$

$$273) 3\sqrt{5}(\sqrt{5} + 3)$$

$$275) \sqrt{2}(\sqrt{5} + \sqrt{2})$$

$$277) \sqrt{15}(4 + 5\sqrt{3})$$

$$279) \sqrt{15}(5 + \sqrt{5})$$

$$281) (-5\sqrt{2} + \sqrt{5})(5\sqrt{2} - 2\sqrt{5})$$

$$283) (\sqrt{3} - 1)(\sqrt{3} - 3)$$

$$285) (3 + 3\sqrt{3})(3 - \sqrt{3})$$

$$287) (\sqrt{5} - 5)(\sqrt{5} - 2)$$

$$254) \sqrt{50x^2}$$

$$256) \sqrt{12n}$$

$$258) \sqrt{64x}$$

$$260) 4\sqrt{18x^2y}$$

$$262) 4\sqrt{45xy^2}$$

$$264) 2\sqrt{45x^2y^2}$$

$$266) 3\sqrt{8} + 3\sqrt{2} - 3\sqrt{18}$$

$$268) -3\sqrt{6} - 3\sqrt{18} - 3\sqrt{6}$$

$$270) -3\sqrt{3} + 3\sqrt{12} - 3\sqrt{3}$$

$$272) 2\sqrt{20} - 2\sqrt{8} - 2\sqrt{2}$$

$$274) \sqrt{15}(-2\sqrt{10} + 3)$$

$$276) \sqrt{5}(\sqrt{5} + \sqrt{2})$$

$$278) 3\sqrt{3}(\sqrt{2} + \sqrt{3})$$

$$280) \sqrt{6}(\sqrt{6} + \sqrt{2})$$

$$282) (-2 + \sqrt{3})(1 + \sqrt{3})$$

$$284) (\sqrt{2} + \sqrt{3})^2$$

$$286) (-3\sqrt{5} - 5)(-5\sqrt{5} - 1)$$

$$288) (3 + \sqrt{2})(-3 + 4\sqrt{2})$$

Simplify each expression. (Simplifying Rational Expressions)

$$289) \frac{10(x+8)}{(x+8)(x+3)} \cdot \frac{7(x+3)}{7}$$

$$291) \frac{7n}{n+8} \cdot \frac{8(n+8)}{7n(n-9)}$$

$$293) \frac{6}{7(v-10)} \cdot \frac{7(v-5)}{v-5}$$

$$295) \frac{3(v-3)}{3} \cdot \frac{7v^2(v-10)}{v-10}$$

$$297) \frac{p-3}{p^2+3p+2} - \frac{p-1}{p^2+3p+2}$$

$$290) \frac{6n(n+4)}{6n} \cdot \frac{4-n}{(n-6)(n-4)}$$

$$292) \frac{6(x+1)}{x+10} \cdot \frac{(x-1)(x+10)}{x+1}$$

$$294) \frac{10(x+4)}{4} \cdot \frac{x-8}{10(x-8)}$$

$$296) \frac{(p+6)(p-8)}{(4-p)(p-5)} \cdot \frac{(p-4)(p-5)}{p-8}$$

$$298) \frac{x+2}{6x^2+12x} + \frac{x-6}{6x^2+12x}$$

$$299) \frac{x+4}{5x^2-24x-5} - \frac{x-3}{5x^2-24x-5}$$

$$301) \frac{5n}{n-5} + \frac{4}{n+1}$$

$$303) \frac{6m}{3m} - \frac{m-6}{2m+6}$$

$$305) \frac{4}{a-4} + \frac{3}{a-3}$$

$$307) \frac{5}{2k} - \frac{6k}{3k^3-36k^2+108k}$$

$$300) \frac{x+6}{x^2+9x+18} - \frac{x+1}{x^2+9x+18}$$

$$302) \frac{6m}{3m-4} + \frac{4m}{4m^2}$$

$$304) \frac{5x}{x+2} - \frac{2}{6}$$

$$306) \frac{3}{n-2} - \frac{3}{n+4}$$

$$308) \frac{2}{p+1} + \frac{3p}{p+3}$$

Solve each equation. Remember to check for extraneous solutions. (Solving Rational Equations)

$$309) \frac{1}{2n} + \frac{1}{2n^2} = \frac{1}{n^2}$$

$$311) \frac{1}{6n} = \frac{1}{n} + 1$$

$$313) \frac{1}{n} + \frac{1}{n^2} = \frac{5}{n^2}$$

$$315) \frac{1}{n} - \frac{1}{2n} = \frac{n+6}{4n^2}$$

$$310) \frac{1}{b} = \frac{5}{b} - \frac{3b-15}{b^2}$$

$$312) \frac{1}{m^2} + \frac{1}{m} = \frac{4}{m^2}$$

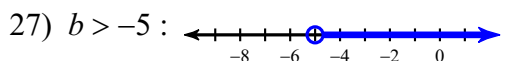
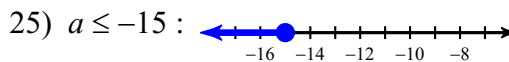
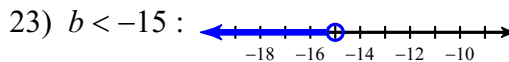
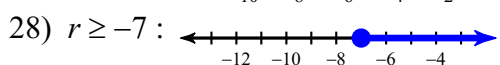
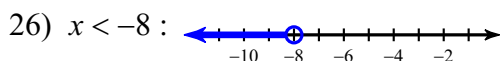
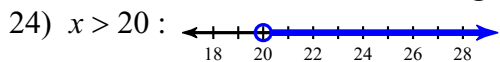
$$314) \frac{3}{n} = 1 - \frac{1}{n}$$

$$316) \frac{3}{4} = \frac{2x+12}{x} + \frac{1}{2x}$$

Answers to Summer Packet: Algebra 2 (Part 1) (ID: 1)

- | | | | |
|---------------------------------------|-------------------|-------------------------|-------------------------|
| 1) $\{1\}$ | 2) $\{-1\}$ | 3) $\{-6\}$ | 4) $\{-2\}$ |
| 5) $\{-6\}$ | 6) $\{0\}$ | 7) $\{1\}$ | 8) $\{8\}$ |
| 9) $\{10, -10\}$ | 10) $\{-2, -10\}$ | 11) $\{0, -12\}$ | 12) $\{18, -6\}$ |
| 13) $\left\{\frac{16}{5}, -2\right\}$ | 14) $\{3, -4\}$ | 15) $a = u + k$ | 16) $a = \frac{u}{k}$ |
| 17) $x = z + m$ | 18) $a = uk$ | 19) $x = \frac{c}{g+1}$ | 20) $a = \frac{c}{g+1}$ |

21) $x = \frac{k}{-u+1}$ 22) $x = \frac{c}{g-1}$



- 31) $\left\{\frac{79}{6}\right\}$ 32) $\{9\}$

- 29) $\left\{-\frac{2}{3}\right\}$ 30) $\left\{\frac{93}{5}\right\}$

- 34) Domain: $\{-2, 2, 5\}$
Range: $\{-7, -5, -1, 7\}$
The relation is not a function.

- 33) Domain: $\{-3, -2, 0, 3, 5\}$
Range: $\{-5, 1, 4, 5, 7\}$
The relation is a function.

- 36) Domain: $\{-6, 0, 1, 4\}$
Range: $\{-4, -3, 6, 7\}$
The relation is not a function.

- 35) Domain: $\{-6, -5, -4, -3, 1\}$
Range: $\{-6, -2, 0, 2, 4\}$
The relation is a function.

- 38) Domain: $\{-5, -4, -2, 1, 3\}$
Range: $\{-7, 2, 4, 6\}$
The relation is a function.

- 39) Domain: $\{-7, -6, 4, 5\}$
Range: $\{-5, -3, -2, 1, 2\}$
The relation is not a function.

- 40) Domain: $\{-7, -6, -2, -1, 3\}$
Range: $\{-7, -3, 1, 3\}$
The relation is a function.

- 41) The relation is not a function.
Domain: $x = 2$
Range: $-4 \leq y \leq 6$

- 42) The relation is not a function.
Domain: $x \leq 1$
Range: All real numbers

- 43) The relation is not a function.
Domain: $x \geq -2$
Range: $y < 4$

- 44) The relation is a function.
Domain: $x > -4$
Range: $y \geq -1$

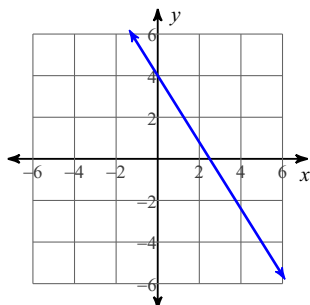
- 45) The relation is a function.
Domain: $-4 \leq x \leq 4$
Range: $0 \leq y \leq 4$

- 46) The relation is a function.
Domain: $-7 \leq x < 4$
Range: $-6 \leq y < 5$

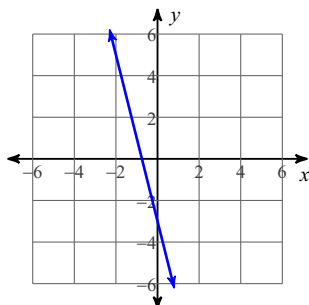
- 47) -4 48) 2
51) 1 52) 9

- 49) -2 50) -4
53) 0 54) -3

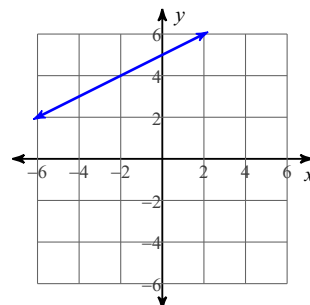
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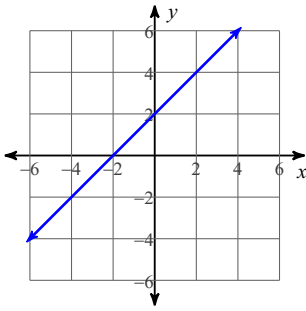
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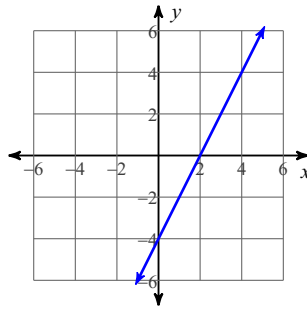
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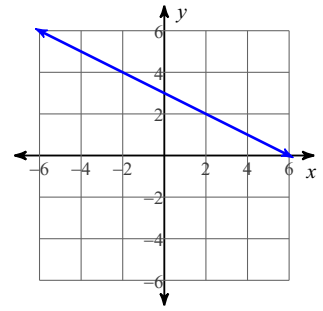
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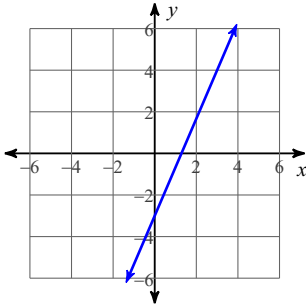
59)



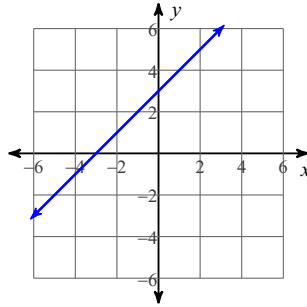
60)



61)



62)



63) -10

64) $\frac{1}{9}$

65) $\frac{20}{3}$

66) $-\frac{1}{32}$

67) $y = -2x - 1$

68) $y = x + 4$

69) $y = \frac{3}{5}x + \frac{22}{5}$

70) $y = \frac{7}{3}x - 2$

71) $y = \frac{1}{2}x + 3$

72) $y = 2x + 9$

73) $y = -2x$

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

75) $y = 3x - 4$

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

77) $y = 2x$

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

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

80) $y = 3x + 13$

81) $y = -9x - 4$

82) $y = 5x + 17$

83) $(7, -7)$

84) $(-5, -5)$

85) $(2, 2)$

86) No solution

87) $(-3, 1)$

88) $(3, -1)$

89) $(1, -2)$

90) $(-4, 2)$

91) $(6, -2)$

92) $(1, 1)$

93) $(-4, -7)$

94) $(-2, -3)$

95) $(3, -1)$

96) $(-3, 1)$

97) $(-1, 3)$

98) $(-4, -2)$

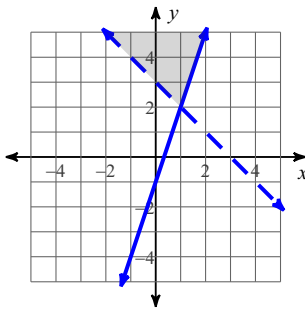
99) $(3, 1)$

100) $(-2, 3)$

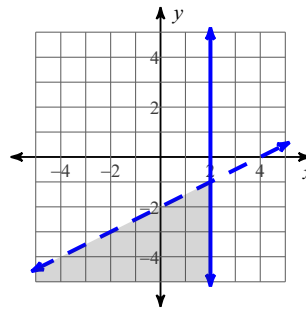
101) $(-1, -1)$

102) $(3, -2)$

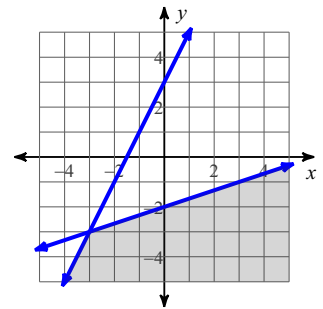
103)



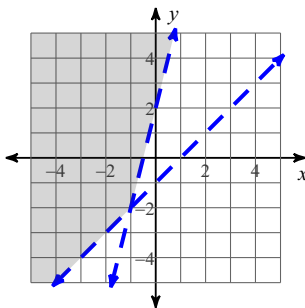
104)



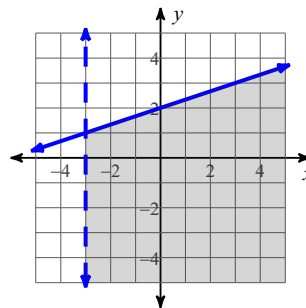
105)



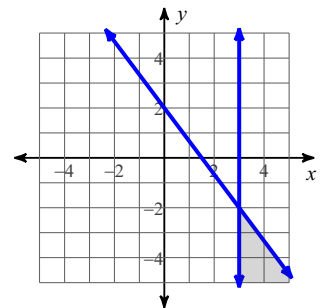
106)



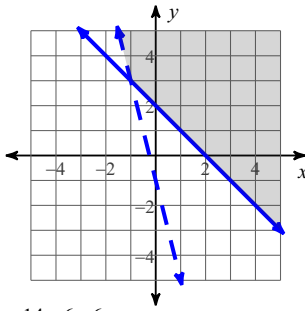
107)



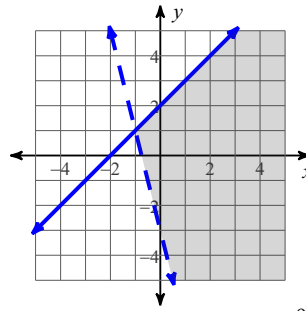
108)



109)



110)

111) $-8m^{21}n^6p^{21}$

112) $a^{14}b^6c^6$

113) $r^9q^{21}p^9$

114) $-2x^9y^8z^3$

115) $2c^9a^{12}b^{16}$

116) $-4p^5r^4q^8$

117) $4a^{10}b^{12}c^8$

118) $x^{10}y^{12}z^{10}$

119) $\frac{4z^2}{9yx^3}$

120) $2m^2q^3p^2$

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

122) $\frac{1}{2x^6y^2z^3}$

123) $-\frac{x^2y^4}{z}$

124) $\frac{8n^2}{3m^3}$

125) $\frac{4hj^3k^6}{3}$

126) $-\frac{xy^2z^3}{2}$

127) $7x^3 + 7x^2 + 6x - 4$

128) $-7n^4 - 5n^3 + 7n^2 + 3$

129) $-3n^4 + 4n^3 + 6$

130) $-2b^4 + 11b^3 - b$

131) $12n + 7$

132) $7k^3 - 15k^2 + 9$

133) $7n^4 + 6n^3 + 2n^2 + 3n$

134) $-4a^4 + 3a^3 - 6$

135) $3x^3 - 3x^2 - 3x + 2$

136) $-5n^3 - 8n^2 + 6n - 5$

137) $3m^3 + 5m^2 + 12m - 2$

138) $4a^3 - 14a^2 - 4a + 10$

139) $9b^4 - 9b^3 - 7b + 7$

140) $7n^4 - 8n^3 - 8n^2 - 9$

141) $-3b^4 - 15b^3 - 6b^2 + 7b + 5$

142) $-4n^4 + 2n^3 + 3$

143) $-4k^3 + 4k^2 - 4k + 2$

144) $3x^4 + 11x^3 + 4x^2 + 5$

145) $12n^2 + 5n - 28$

146) $35v^2 - 69v + 28$

147) $8p^2 + 6p - 35$

148) $30n^2 + 3n - 6$

149) $30n^2 + 72n + 42$

150) $8x^2 + 47x - 6$

151) $56x^3 + 53x^2 + 54x + 24$

152) $2x^3 + 17x^2 + 23x + 14$

153) $6k^3 - 41k^2 - 14k + 49$

154) $12n^3 - 4n^2 - 46n - 10$

155) $48x^3 - 28x^2 - 66x - 14$

156) $24k^3 - 42k^2 + 19k - 5$

157) $(x + 7)(x + 3)$

158) $(x - 7)(x - 8)$

159) $(v - 5)(v + 2)$

160) $k(k + 2)$

161) $n(n + 5)$

162) $(k + 8)(k - 2)$

163) $5(x - 4)(x + 6)$

164) $2(a - 3)(a - 7)$

165) $2(x - 1)(x - 4)$

166) $6r(r + 10)$

167) $5n(n - 10)$

168) $2(x + 5)(x - 4)$

169) $b(3b + 4)$

170) $n(5n - 2)$

171) $(3b + 2)(b - 3)$

172) $(5a - 2)(a - 3)$

173) $x(3x - 4)$

174) $(5m + 2)(m - 4)$

175) $2(5b - 2)(b - 3)$

176) $2(3n + 1)(n - 2)$

177) $2(2n - 5)(n + 2)$

178) $3(5n - 1)(n + 1)$

179) $2(5r - 4)(r - 1)$

180) $3x(2x + 3)$

181) $(2v + 1)(2v + 3)$

182) $(2n + 5)(2n - 1)$

183) $(x - 2)(4x - 5)$

184) $(2n + 3)(2n - 3)$

185) $4n(n - 1)$

186) $4p(p + 5)$

187) $2(x + 1)(4x - 1)$

188) $3(x - 1)(4x - 1)$

189) $12b(b - 5)$

190) $3(r + 5)(4r + 1)$

191) $2(r - 5)(4r - 3)$

192) $2(p - 2)(4p - 5)$

193) $(x + 3)(x - 3)$

194) $(5b + 4)(5b - 4)$

195) $(n + 2)(n - 2)$

196) $(3x + 4)(3x - 4)$

197) $(3p + 1)(3p - 1)$

198) $(3b + 5)(3b - 5)$

199) $(m + 1)(m - 1)$

200) $(2n + 1)(2n - 1)$

201) $(3k^2 + 1)(3k - 2)$

202) $(2p^2 + 1)(2p + 3)$

203) $(3x^2 + 1)(3x + 1)$

204) $(3n^2 + 1)(n + 1)$

205) $(3n^2 + 2)(2n + 3)$

206) $(n^2 + 3)(2n - 3)$

207) $(n^2 - 2)(2n - 3)$

208) $(2n^2 - 3)(2n - 3)$

209) $(b - 2x)(2c + 3d)$

210) $(2a + x)(z - c)$

211) $(m^2 + n)(c + 2f)$

212) $(3p - q)(w - f)$

213) $\{6, -6\}$

214) $\{7, -7\}$

215) $\{5, -5\}$

216) $\{5\sqrt{2}, -5\sqrt{2}\}$

217) $\{1, -1\}$

218) $\{6, -6\}$

219) $\{2, -2\}$

220) No solution.

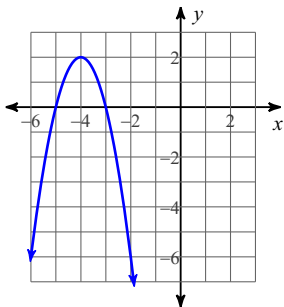
221) $\{7, -7\}$

222) $\{3, -3\}$

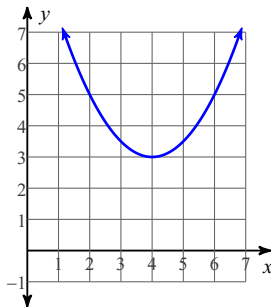
223) $\{6, -6\}$

224) $\left\{\frac{6}{7}, -\frac{6}{7}\right\}$

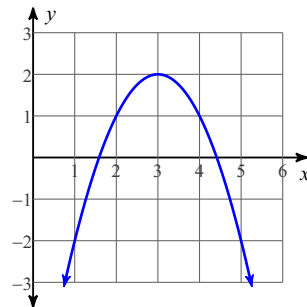
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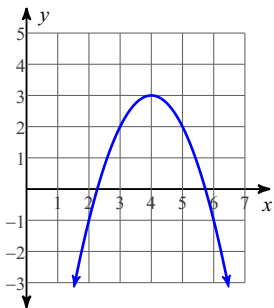
226)



227)



228)

229) $\{-4, -8\}$ 230) $\{4, 1\}$ 231) $\{-3, -4\}$ 232) $\{5, -8\}$ 233) $\{3, -3\}$ 234) $\{1, -1\}$ 235) $\{2, -4\}$ 236) $\{4, -2\}$ 237) $\left\{\frac{3 + \sqrt{33}}{2}, \frac{3 - \sqrt{33}}{2}\right\}$ 238) $\left\{\frac{-1 - \sqrt{13}}{2}, \frac{-1 + \sqrt{13}}{2}\right\}$ 239) $\left\{\frac{\sqrt{10}}{2}, -\frac{\sqrt{10}}{2}\right\}$ 240) $\left\{\frac{1 - \sqrt{5}}{2}, \frac{1 + \sqrt{5}}{2}\right\}$ 241) $\{2, -3\}$ 242) $\left\{\frac{3 - \sqrt{69}}{6}, \frac{3 + \sqrt{69}}{6}\right\}$ 243) $\{3, -3\}$ 244) $\left\{-\frac{\sqrt{3}}{3}, \frac{\sqrt{3}}{3}\right\}$ 245) $\{2, -20\}$ 246) $\{2, -12\}$ 247) $\{15, 1\}$ 248) $\{4, -10\}$ 249) $\{-2, -4\}$ 250) $\{3, -1\}$ 251) $\{1.667, -3.667\}$ 252) $\{3.042, -9.042\}$ 253) $5k\sqrt{3}$ 254) $5x\sqrt{2}$ 255) $2\sqrt{2x}$ 256) $2\sqrt{3n}$ 257) $10n$ 258) $8\sqrt{x}$ 259) $-8y\sqrt{2x}$ 260) $12x\sqrt{2y}$ 261) $10a\sqrt{3b}$ 262) $12y\sqrt{5x}$ 263) $30\sqrt{uv}$ 264) $6xy\sqrt{5}$ 265) $-4\sqrt{5}$ 266) 0 267) $-5\sqrt{2} + 4\sqrt{5}$ 268) $-6\sqrt{6} - 9\sqrt{2}$ 269) $-4\sqrt{6} - 6\sqrt{2}$ 270) 0 271) $8\sqrt{6} - 4\sqrt{5}$ 272) $4\sqrt{5} - 6\sqrt{2}$ 273) $15 + 9\sqrt{5}$ 274) $-10\sqrt{6} + 3\sqrt{15}$ 275) $\sqrt{10} + 2$ 276) $5 + \sqrt{10}$ 277) $4\sqrt{15} + 15\sqrt{5}$ 278) $3\sqrt{6} + 9$ 279) $5\sqrt{15} + 5\sqrt{3}$ 280) $6 + 2\sqrt{3}$ 281) $-60 + 15\sqrt{10}$ 282) $1 - \sqrt{3}$ 283) $6 - 4\sqrt{3}$ 284) $5 + 2\sqrt{6}$ 285) $6\sqrt{3}$ 286) $80 + 28\sqrt{5}$ 287) $15 - 7\sqrt{5}$ 288) $-1 + 9\sqrt{2}$ 289) 10 290) $\frac{-n-4}{n-6}$ 291) $\frac{8}{n-9}$ 292) $6(x-1)$ 293) $\frac{6}{v-10}$ 294) $\frac{x+4}{4}$ 295) $7v^2(v-3)$ 296) $-p-6$ 297) $-\frac{2}{p^2+3p+2}$ 298) $\frac{x-2}{3x^2+6x}$ 299) $\frac{7}{5x^2-24x-5}$ 300) $\frac{5}{x^2+9x+18}$ 301) $\frac{5n^2+9n-20}{(n-5)(n+1)}$ 302) $\frac{6m^2+3m-4}{m(3m-4)}$ 303) $\frac{3m+18}{2(m+3)}$ 304) $\frac{14x-2}{3(x+2)}$ 305) $\frac{7a-24}{(a-4)(a-3)}$ 306) $\frac{18}{(n-2)(n+4)}$ 307) $\frac{5k^2-64k+180}{2k(k-6)^2}$

$$308) \frac{5p + 6 + 3p^2}{(p + 3)(p + 1)}$$

$$312) \{3\}$$

$$316) \{-10\}$$

$$309) \{1\}$$

$$313) \{4\}$$

$$310) \{-15\}$$

$$314) \{4\}$$

$$311) \left\{-\frac{5}{6}\right\}$$

$$315) \{6\}$$