



Geometry

Summer Math Packet

Congratulations! You will soon be learning Geometry!

This summer math packet is a review of some of the concepts learned in your Algebra I class which are needed when you begin your Geometry course in August. It will assure that all students begin the school year on the same page and with equal opportunity to learn and build upon mathematical concepts that should have been learned in previous courses.

Instructions for completing the packet:

- Please print the packet or use loose leaf paper to complete the packet by hand showing all work. Work must be neat and legible.
- Please use your Algebra I notes or the websites provided to help you if you need reminders on how to complete some practice problems.
- Take notes as you complete your work. You will be given a quiz on this material the first week of school.
- Work on the packet with your friends. Help each other. Every student is responsible for knowing the material in this packet when you return in August. We will review as a team and everyone will be expected to participate.
- Bring your packet to our first class together. It will be collected for a grade. Only packets done with paper and pencil will be accepted.

Helpful Websites:

<http://www.mathstv.com/>

<http://www.purplemath.com/modules/index.htm>

<https://www.khanacademy.org>

Helpful for graphing functions:

<https://www.education.ti.com/en/resources/family-of-functions>

Summer Math Packet

Date _____ Period _____

Evaluate each expression.

1) $\left(3\frac{1}{3}\right)\left(\frac{5}{4}\frac{7}{3}\right)$

2) $(2)\left(3\frac{3}{4}-\frac{3}{2}\right)$

3) $4.8 + 4.5 + 3.6$

4) $5 + 4 + 2.6$

5) $(1 + 2)\left(\frac{1 + 7}{2}\right)$

6) $1 + \frac{6}{2} + \frac{6}{3}$

7) $\frac{12}{(2)(4) - (1 + 1)}$

8) $\frac{18 + (3)(2)}{2^2}$

Evaluate each using the values given.

9) $z + \frac{y}{3}$; use $y = 3$, and $z = -4$

10) $x - (x - y)$; use $x = -1$, and $y = -2$

11) $\frac{6m}{n}$; use $m = 2$, and $n = \frac{5}{3}$

12) $\frac{5n}{m}$; use $m = \frac{9}{5}$, and $n = 2$

13) $(m + p)^2$; use $m = 1$, and $p = 5$

14) $xy - x$; use $x = 4$, and $y = 6$

Solve each equation.

15) $x + 20 = 37$

16) $-5 - p = 8$

17) $1 + x = -\frac{7}{9}$

18) $-\frac{11}{10}x = -\frac{11}{15}$

19) $6p + 6 - p = 11$

20) $-5x + 3x = 10$

21) $-7(3p - 8) = 182$

22) $-8(1 + 5n) = -168$

23) $1 + 8a + 2a = -19$

24) $n + 4 - 1 = 7$

25) $3p + 7p = 10 + 5p$

26) $a - 3 = 7a - 3a - 15$

$$27) -4(-3 - 6b) = -20 + 8b$$

$$28) -3r - 3(-4r - 5) = -3r + 27$$

$$29) -2v + \frac{3}{5}v = -\frac{21}{10}$$

$$30) -\frac{3}{2}n + \frac{11}{4}n = 5$$

$$31) \frac{3}{5}n - \frac{5}{4}n = \frac{13}{30}$$

$$32) \frac{2}{5}v + 1 + \frac{7}{2}v = \frac{79}{40}$$

Solve each proportion.

$$33) \frac{10}{8} = \frac{9}{n}$$

$$34) \frac{5}{8} = \frac{m}{4}$$

$$35) \frac{4}{5} = \frac{r+1}{6}$$

$$36) -\frac{2}{7} = \frac{m-1}{3}$$

$$37) \frac{2}{10} = \frac{n}{n-2}$$

$$38) \frac{k}{6} = \frac{k-3}{4}$$

39) $\frac{x+9}{x+1} = \frac{6}{8}$

40) $-\frac{10}{8} = \frac{n+6}{n-5}$

Solve each equation.

41) $3(b+7) = 57$

42) $\frac{x}{3} + 8 = 4$

43) $\frac{-9+b}{21} = -1$

44) $8 = \frac{b}{18} + 7$

Simplify. Your answer should contain only positive exponents.

45) $\frac{a^4}{a^3 a^4}$

46) $\frac{(2b^2)^{-2} \cdot 2b}{b}$

47) $\frac{yx^3 \cdot x^3}{(2x^3 y^4)^2}$

48) $\frac{(x^4)^2}{x^4 y^3 \cdot 2y^{-2}}$

Simplify each expression.

$$49) (5x^4 - x - 5) - (3 - 2x^4 + 2x^3) + (7x^3 - 8x^4)$$

$$50) (8n + 4n^4 - 5) + (2 - 2n - 6n^4) - (4n^4 - n)$$

Find each product.

$$51) 6n^2(3n - 4)$$

$$52) 7(v - 7)$$

$$53) (2k + 3)(8k - 7)$$

$$54) (3a + 5)(7a + 7)$$

$$55) (4a^2 - 6a - 7)(7a - 2)$$

$$56) (3p^2 + 8p + 1)(2p - 5)$$

$$57) (3a - 4)^2$$

$$58) (3m - 7)(3m + 7)$$

Factor the common factor out of each expression.

59) $-42 - 28x^5 + 49x^3$

60) $-18a^2 - 30a - 15$

Factor each completely.

61) $4n^3 - n^2 + 28n - 7$

62) $5b^3 - 8b^2 - 25b + 40$

63) $k^2 + 5k - 24$

64) $n^2 - 2n$

65) $a^2 - 9a + 8$

66) $2m^2 + 2m - 112$

67) $7n^2 + 57n - 54$

68) $2n^2 - 11n + 15$

69) $3x^2 - 20x + 32$

70) $7n^2 + 45n + 18$

$$71) 9x^2 - 17x + 8$$

$$72) 9k^2 + 76k - 45$$

$$73) 9n^2 + 36n + 32$$

$$74) 6r^2 - 55r + 56$$

$$75) 9n^2 - 77n + 40$$

$$76) 6p^2 + 19p - 36$$

$$77) 9x^2 - 27x - 10$$

$$78) 9x^2 - 73x - 72$$

$$79) x^2 + 13xy + 42y^2$$

$$80) 7u^2 - 64uv + 64v^2$$

$$81) 25m^2 - 1$$

$$82) n^4 - 25$$

$$83) 4n^2 - 12n + 9$$

$$84) 16n^2 - 8n + 1$$

Solve each equation by factoring.

85) $v^2 + v = 56$

86) $m^2 = -48 - 14m$

87) $4x^2 - 25 = 0$

88) $3n^2 + 2n = 0$

Solve each equation by taking square roots.

89) $9x^2 - 10 = 71$

90) $4m^2 + 3 = 43$

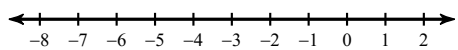
Solve each equation with the quadratic formula.

91) $b^2 + 9b + 16 = 0$

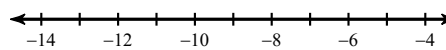
92) $4x^2 - 5x + 1 = 0$

Solve each inequality and graph its solution.

93) $-5 \geq 5 - 3k + 8k$



94) $6x + 6(x - 6) \geq -120$



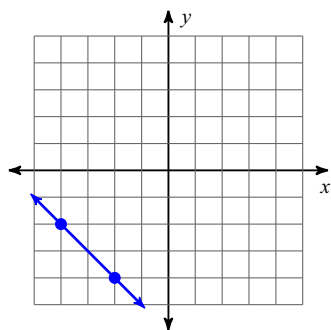
Divide.

95) $(27x^3 + 9x^2 + 45x) \div 9x$

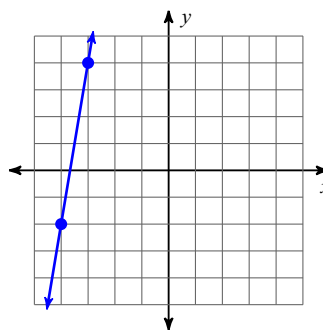
96) $(3a^6 + 3a^5 + 5a^4) \div 10a$

Find the slope of each line.

97)



98)



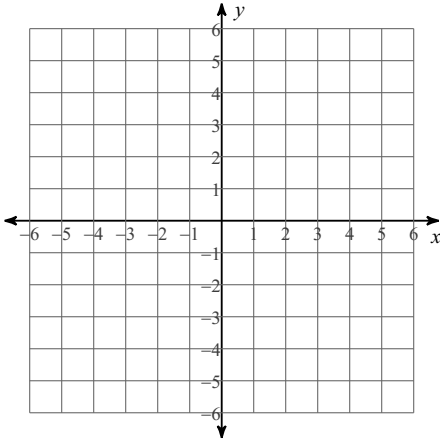
Find the slope of the line through each pair of points.

99) $(15, -2), (-6, 1)$

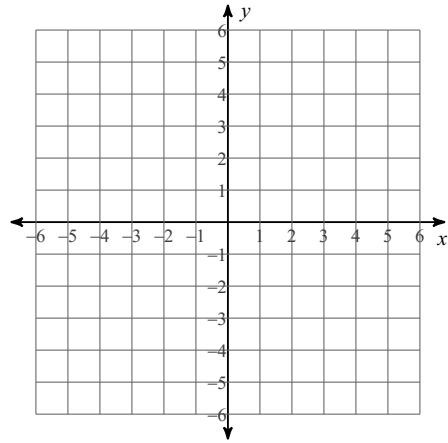
100) $(12, -20), (-16, 17)$

Sketch the graph of each line.

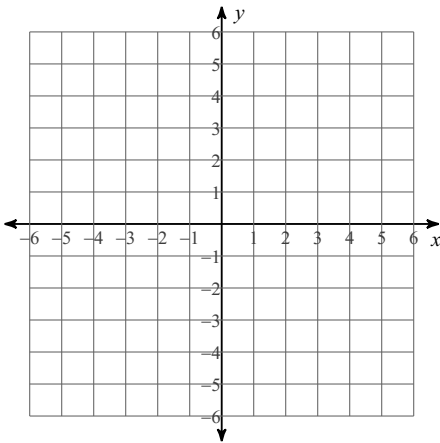
101) $y = \frac{2}{3}x + 1$



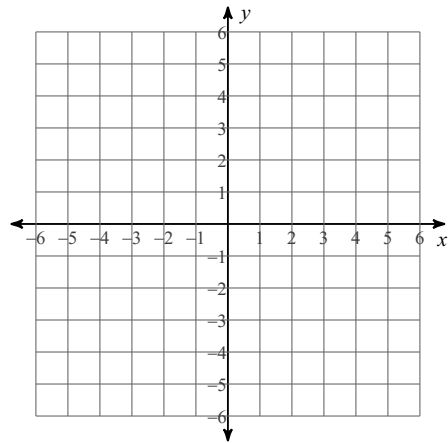
102) $y = -2x - 5$



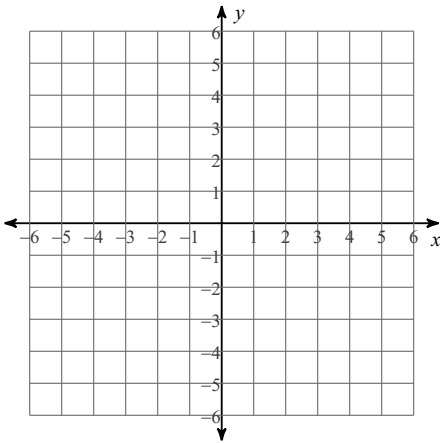
103) $y = -\frac{2}{5}x + 3$



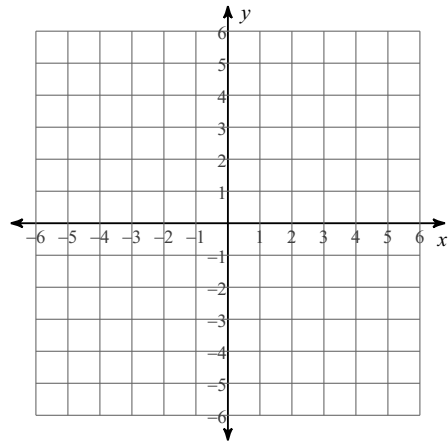
104) $y = -\frac{5}{2}x$



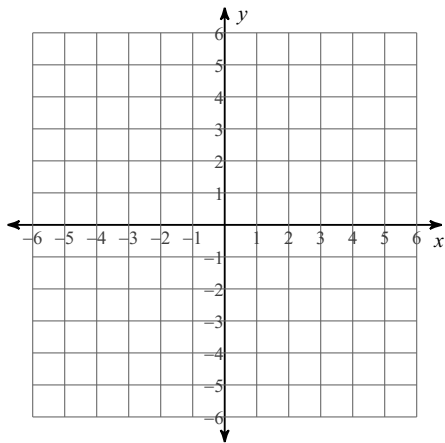
105) $x + 2y = -2$



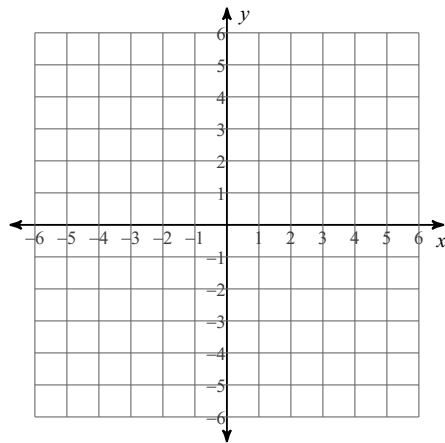
106) $y = 1$



107) $2x + y = -3$

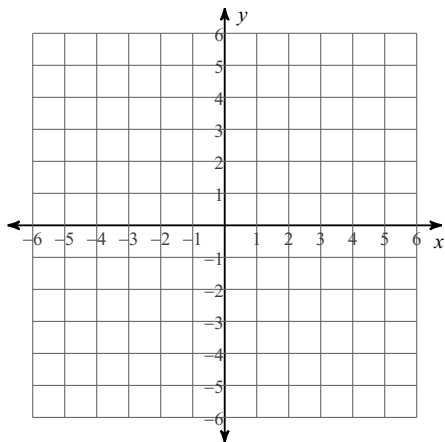


108) $x = 5$

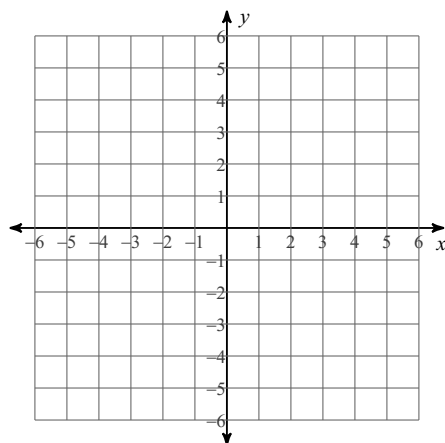


Sketch the graph of each linear inequality.

109) $y > 3$



110) $y \leq -\frac{2}{5}x - 2$



Write the slope-intercept form of the equation of the line through the given point with the given slope.

111) through: $(4, -4)$, slope = $-\frac{3}{2}$

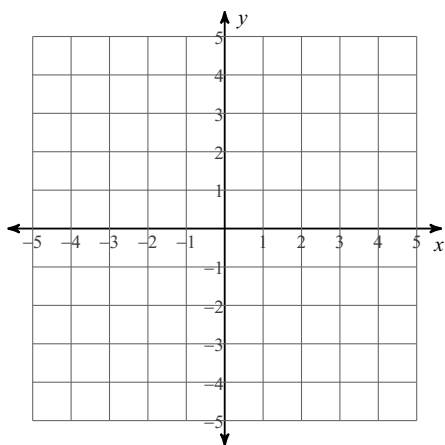
Write the slope-intercept form of the equation of the line through the given points.

112) through: $(-1, -2)$ and $(0, 1)$

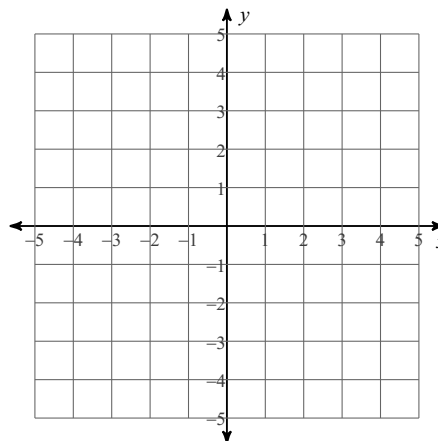
Solve each system by graphing.

113) $y = -\frac{2}{3}x + 3$

$$y = \frac{4}{3}x - 3$$



114) $y = x + 2$
 $y = -x - 4$



Solve each system by substitution.

115) $2x + y = 12$
 $3x - 6y = 18$

116) $5x - 7y = 19$
 $x - 2y = 2$

Solve each system by elimination.

$$\begin{aligned} 117) \quad & 9x + 9y = 18 \\ & -9x - 10y = -26 \end{aligned}$$

$$\begin{aligned} 118) \quad & 9x + 6y = -9 \\ & 8x + 12y = 12 \end{aligned}$$

Simplify.

$$119) \quad \sqrt{18}$$

$$120) \quad \sqrt{343}$$

$$121) \quad \sqrt{45}$$

$$122) \quad \sqrt{125}$$

Simplify. Use absolute value signs when necessary.

$$123) \quad \sqrt{175x^3}$$

$$124) \quad \sqrt{64n}$$

$$125) \sqrt{16m}$$

$$126) \sqrt{108x^2}$$

Simplify.

$$127) -\sqrt{45} - 3\sqrt{45}$$

$$128) -\sqrt{24} - 3\sqrt{6}$$

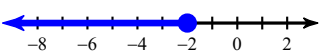
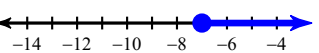
$$129) \sqrt{3}(5\sqrt{2} + \sqrt{10})$$

$$130) (-1 + \sqrt{2})(4 + \sqrt{2})$$

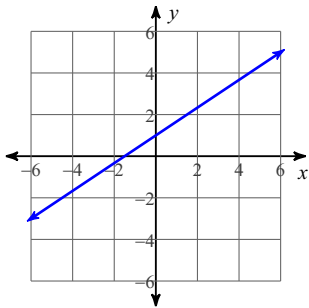
$$131) \frac{3\sqrt{20}}{4\sqrt{15}}$$

$$132) \frac{-4 + 5\sqrt{2}}{-1 + \sqrt{3}}$$

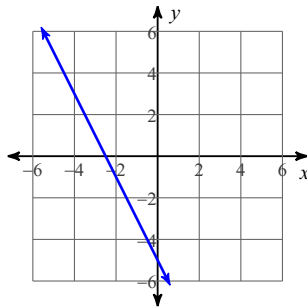
Answers to Summer Math Packet (ID: 1)

- | | | | |
|---|---|---|--|
| 1) $\frac{7}{2}$ | 2) $\frac{9}{2}$ | 3) 12.9 | 4) 11.6 |
| 5) 12 | 6) 6 | 7) 2 | 8) 6 |
| 9) -3 | 10) -2 | 11) $\frac{36}{5}$ | 12) $\frac{50}{9}$ |
| 13) 36 | 14) 20 | 15) $\{17\}$ | 16) $\{-13\}$ |
| 17) $\left\{-\frac{16}{9}\right\}$ | 18) $\left\{\frac{2}{3}\right\}$ | 19) $\{1\}$ | 20) $\{-5\}$ |
| 21) $\{-6\}$ | 22) $\{4\}$ | 23) $\{-2\}$ | 24) $\{4\}$ |
| 25) $\{2\}$ | 26) $\{4\}$ | 27) $\{-2\}$ | 28) $\{1\}$ |
| 29) $\left\{\frac{3}{2}\right\}$ | 30) $\{4\}$ | 31) $\left\{-\frac{2}{3}\right\}$ | 32) $\left\{\frac{1}{4}\right\}$ |
| 33) $\left\{\frac{36}{5}\right\}$ | 34) $\left\{\frac{5}{2}\right\}$ | 35) $\left\{\frac{19}{5}\right\}$ | 36) $\left\{\frac{1}{7}\right\}$ |
| 37) $\left\{-\frac{1}{2}\right\}$ | 38) $\{9\}$ | 39) $\{-33\}$ | 40) $\left\{\frac{1}{9}\right\}$ |
| 41) $\{12\}$ | 42) $\{-12\}$ | 43) $\{-12\}$ | 44) $\{18\}$ |
| 45) $\frac{1}{a^3}$ | 46) $\frac{1}{2b^4}$ | 47) $\frac{1}{4y^7}$ | 48) $\frac{x^4}{2y}$ |
| 49) $-x^4 + 5x^3 - x - 8$ | 50) $-6n^4 + 7n - 3$ | 51) $18n^3 - 24n^2$ | 52) $7v - 49$ |
| 53) $16k^2 + 10k - 21$ | 54) $21a^2 + 56a + 35$ | 55) $28a^3 - 50a^2 - 37a + 14$ | |
| 56) $6p^3 + p^2 - 38p - 5$ | 57) $9a^2 - 24a + 16$ | 58) $9m^2 - 49$ | 59) $7(-6 - 4x^5 + 7x^3)$ |
| 60) $-3(6a^2 + 10a + 5)$ | 61) $(n^2 + 7)(4n - 1)$ | 62) $(b^2 - 5)(5b - 8)$ | 63) $(k - 3)(k + 8)$ |
| 64) $n(n - 2)$ | 65) $(a - 8)(a - 1)$ | 66) $2(m + 8)(m - 7)$ | 67) $(7n - 6)(n + 9)$ |
| 68) $(2n - 5)(n - 3)$ | 69) $(3x - 8)(x - 4)$ | 70) $(7n + 3)(n + 6)$ | 71) $(x - 1)(9x - 8)$ |
| 72) $(k + 9)(9k - 5)$ | 73) $(3n + 4)(3n + 8)$ | 74) $(r - 8)(6r - 7)$ | 75) $(n - 8)(9n - 5)$ |
| 76) $(2p + 9)(3p - 4)$ | 77) $(3x + 1)(3x - 10)$ | 78) $(x - 9)(9x + 8)$ | 79) $(x + 7y)(x + 6y)$ |
| 80) $(7u - 8v)(u - 8v)$ | 81) $(5m + 1)(5m - 1)$ | 82) $(n^2 + 5)(n^2 - 5)$ | 83) $(2n - 3)^2$ |
| 84) $(4n - 1)^2$ | 85) $\{-8, 7\}$ | 86) $\{-6, -8\}$ | 87) $\left\{\frac{5}{2}, -\frac{5}{2}\right\}$ |
| 88) $\left\{-\frac{2}{3}, 0\right\}$ | 89) $\{3, -3\}$ | 90) $\{\sqrt{10}, -\sqrt{10}\}$ | |
| 91) $\left\{\frac{-9 + \sqrt{17}}{2}, \frac{-9 - \sqrt{17}}{2}\right\}$ | 92) $\left\{1, \frac{1}{4}\right\}$ | | |
| 93) $k \leq -2$:  | | 94) $x \geq -7$:  | |
| 95) $3x^2 + x + 5$ | 96) $\frac{3a^5}{10} + \frac{3a^4}{10} + \frac{a^3}{2}$ | 97) -1 | 98) 6 |
| 99) $-\frac{1}{7}$ | 100) $-\frac{37}{28}$ | | |

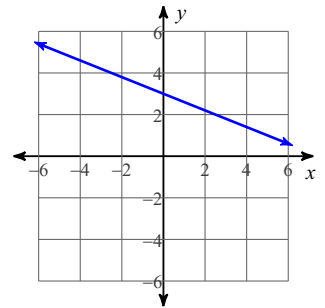
101)



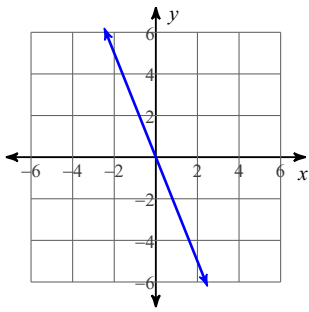
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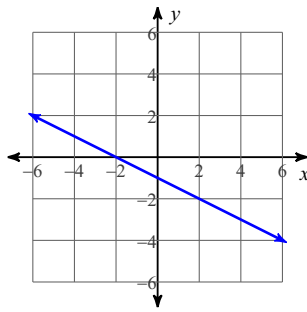
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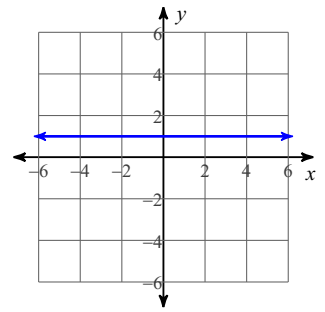
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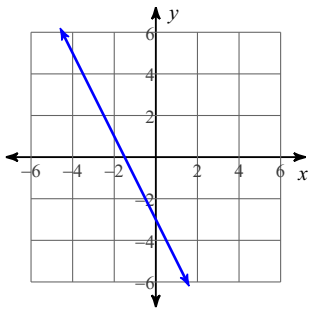
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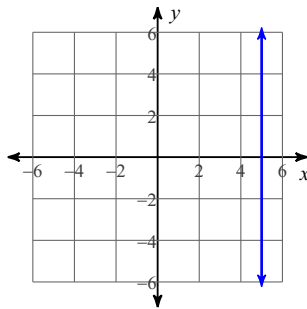
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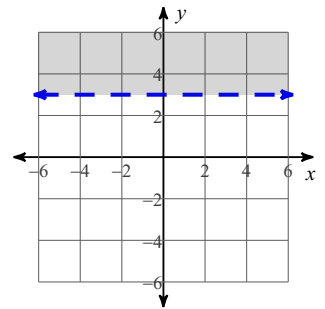
107)



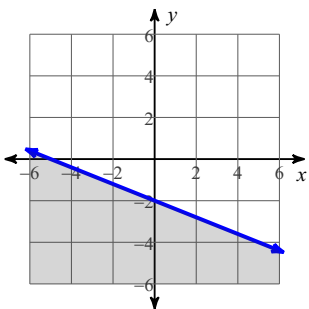
108)



109)



110)



111) $y = -\frac{3}{2}x + 2$

112) $y = 3x + 1$

113) $(3, 1)$

114) $(-3, -1)$

115) $(6, 0)$

116) $(8, 3)$

117) $(-6, 8)$

118) $(-3, 3)$

119) $3\sqrt{2}$

120) $7\sqrt{7}$

121) $3\sqrt{5}$

122) $5\sqrt{5}$

123) $5|x|\sqrt{7x}$

124) $8\sqrt{n}$

125) $4\sqrt{m}$

126) $6|x|\sqrt{3}$

127) $-12\sqrt{5}$

128) $-5\sqrt{6}$

129) $5\sqrt{6} + \sqrt{30}$

130) $-2 + 3\sqrt{2}$

131) $\frac{\sqrt{3}}{2}$

132) $\frac{-4 - 4\sqrt{3} + 5\sqrt{2} + 5\sqrt{6}}{2}$