

Chapter 9 BLM Answers

BLM 9-2 Chapter 9 Prerequisite Skills

1. a) domain: $\{x \mid x \in \mathbb{R}\}$; range: $\{y \mid y \in \mathbb{R}\}$
 b) domain: $\{y \mid y \in \mathbb{R}\}$; range: $\{y \mid y \leq 18, y \in \mathbb{R}\}$

2. a) $m = -6, b = 2$ b) $m = -\frac{1}{2}, b = -3$

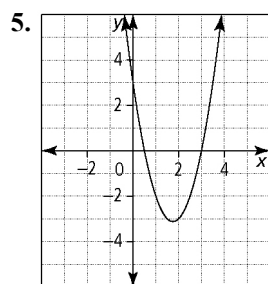
c) $m = 0.75, b = 1.2$ d) $m = -\frac{5}{2}, b = \frac{3}{2}$

3. a) $y = 2x - 3$ b) $y = -x - 5$

c) $y = 3$ d) $y = -\frac{2}{3}x + 1$

4. a) $y = 4x - 19$ b) $y = -3x + 7$

c) $y = 2x$ d) $y = -\frac{3}{4}x + 3$



- a) (1.75, -3.125) b) $x = 1.75$
 c) up d) minimum: -3.125
 e) domain: $\{x \mid x \in \mathbb{R}\}$, range: $\{y \mid y \geq -3.125, y \in \mathbb{R}\}$
 f) (0.5, 0), (3, 0) g) (0, 3)

6. a) $(4x - 9)(x - 1)$ b) $\frac{1}{2}(x - 4)(x + 1)$

c) $(5p - 2)(p + 3)$ d) $(3v + 10)(v + 2)$

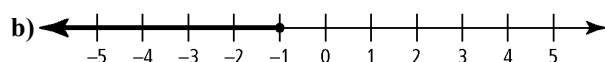
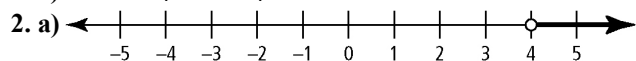
7. a) $-\frac{5}{3}$ and 1 b) $\frac{2 + \sqrt{7}}{3}$ and $\frac{2 - \sqrt{7}}{3}$

c) $-\frac{9}{5}$ d) $-\frac{1}{2}$ and 3

BLM 9-3 Chapter 9 Warm-Up

Section 9.1

1. a) $x \geq -2$ b) $x \leq 1$ c) $x < 3$



3. a) $m = 3$ b) $x = -3$ c) $w = -7$ d) $y = 3$

4. a) i) $b = 20$ ii) $b < 20$ iii) $b > 20$

b) i) $b = 15$ ii) $b < 15$ iii) $b > 15$

c) i) $b = 6$ ii) $b < 6$ iii) $b > 6$

d) i) $b = -40$ ii) $b > -40$ iii) $b < -40$

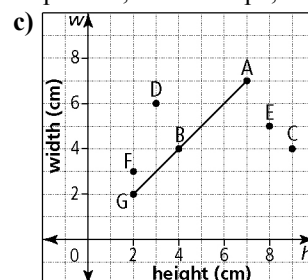
5. a) x-intercept: 2; y-intercept: 5

b) x-intercept: $\frac{3}{2}$; y-intercept: -3

c) x-intercept: $\frac{9}{2}$; y-intercept: 3

6. a) portrait: $h > w$; square: $h = w$; landscape: $h < w$

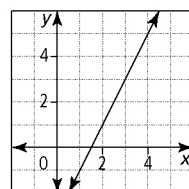
b) A: square; B: square; C: portrait; D: landscape;
 E: portrait; F: landscape; G: square



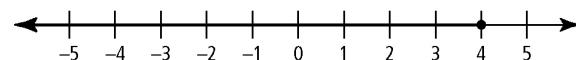
Landscape photos are above the line; portrait photos are below the line.

Section 9.2

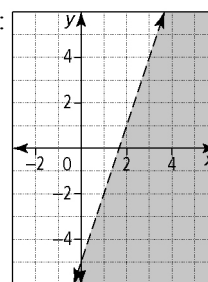
1. Example: A straight line on a graph divides the Cartesian plane into the following three regions: points on the line represent the equation $y = 2x - 3$, points to the left or above the line represent the inequality $y > 2x - 3$, and points to the right or below the line represent the inequality $y < 2x - 3$.



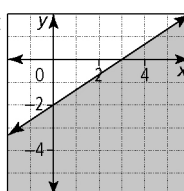
2. a) Example:



b) Example:



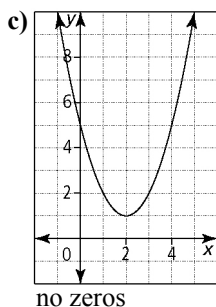
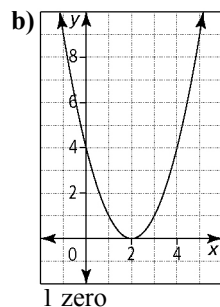
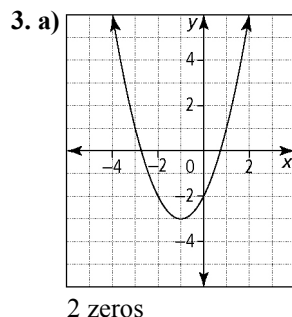
c) Example:



3. a) no b) yes c) yes
 4. a) 17 b) 8.29 c) ± 2
 d) ± 1.2 e) Example: (3, 10)
 5. a) $(x+3)(x-10)$ b) $(x+6)(x+3)$
 c) $(2x+3)(x-2)$ d) $(3x-1)(x+5)$
 6. a) 1 and 4 b) 5 and -2
 c) 8 and -7 d) $\frac{1}{2}$ and -1

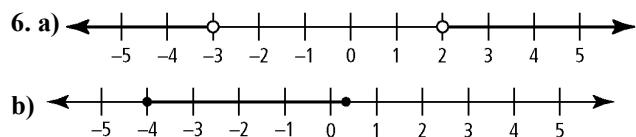
Section 9.3

1. a) $x = \pm 3$ b) $x = 7$ or $x = -1$
 c) $x = -\frac{3}{2}$ or $x = -5$ d) $x = \frac{2}{3}$ or $x = 1$
 2. $x = \frac{-3 \pm \sqrt{17}}{4}$



4. Example: The solutions to a quadratic equation are the roots of the equation. You can find the roots by determining the x -intercepts of the graph or by determining the zeros of the quadratic function. For example, when you graph the quadratic function $f(x) = 2x^2 + 2x - 12$, the x -intercepts are -3 and 2. The zeros of the function occur when $f(x) = 0$, so they are -3 and 2. Therefore, the roots of the corresponding equation, $y = 2x^2 + 2x - 12$, are -3 and 2.

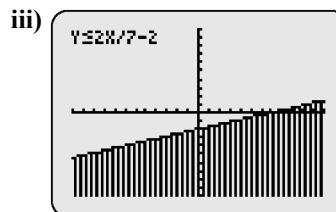
5. a) $-1 \leq x \leq 1$ b) $x < -1$ or $x > 1$ c) $-1 \leq x \leq 4$



BLM 9-4 Section 9.1 Extra Practice

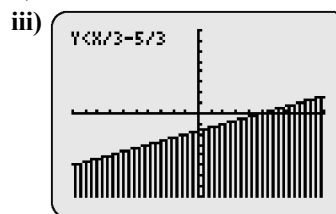
1. a) B and C b) D c) A, B, C, and D
 2. a) i) $y \leq \frac{2}{7}x - 2$, $m = \frac{2}{7}$, y -intercept: -2

ii) solid line



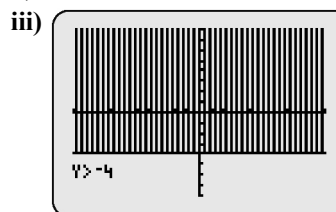
- b) i) $y < \frac{1}{3}x - \frac{5}{3}$, $m = \frac{1}{3}$, y -intercept: $-\frac{5}{3}$

ii) broken line



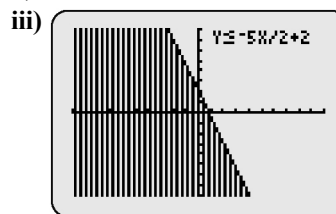
- c) i) $y > -4$, $m = 0$, y -intercept: -4

ii) broken line



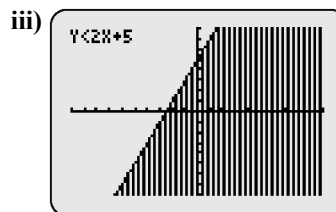
- d) i) $y \leq -\frac{5}{2}x + 2$, $m = -\frac{5}{2}$, y -intercept: 2

ii) solid line



3. a) i) x -intercept: $-\frac{5}{2}$, y -intercept: 5

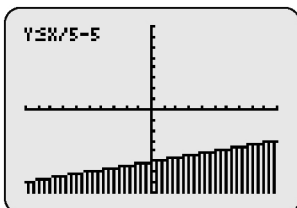
ii) broken line



b) i) x -intercept: 25, y -intercept: -5

ii) solid line

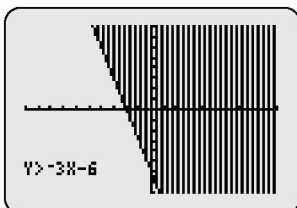
iii)



c) i) x -intercept: -2, y -intercept: -6

ii) broken line

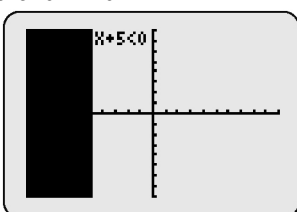
iii)



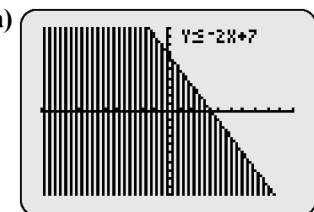
d) i) x -intercept: -5, y -intercept: none

ii) broken line

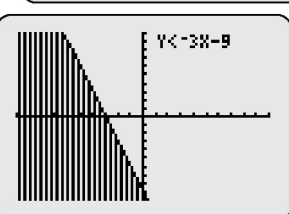
iii)



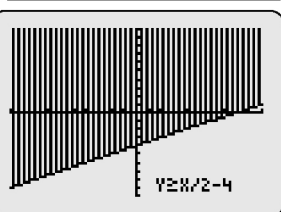
4. a)



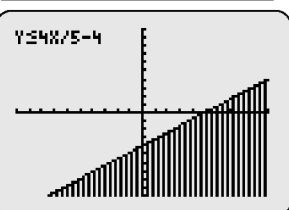
b)



c)



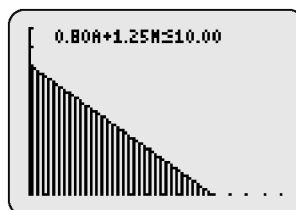
d)



5. a) $0.80a + 1.25m \leq 10.00$, where a is the number of apples and m is the number of muffins

b) The number of apples and the number of muffins must be an integer greater than or equal to zero, or $\{a \mid a \geq 0, a \in \mathbb{I}\}$ and $\{m \mid m \geq 0, m \in \mathbb{I}\}$.

c)



d) You cannot buy 0.8 of a muffin.

6. a) $y \leq \frac{1}{2}x + 2$ b) $y \geq 1$ c) $y < -2x - 3$

BLM 9-5 Section 9.2 Extra Practice

1. a) $x = 1, x = -7$ b) $x < -7$ or $x > 1$ c) $-7 < x < 1$

2. a) -2, -3 b) $-3 < x < -2$ c) $x < -3$ or $x > -2$

3. a) yes b) yes c) no d) yes

4. a) $x < -5$ or $x > 1$ b) $-1 \leq x \leq 3$

c) $-1 \leq x \leq \frac{3}{2}$ d) $1 - \sqrt{3} \leq x \leq 1 + \sqrt{3}$

5. a) $x < 2$ or $x > \frac{9}{4}$ b) $-\frac{5}{4} \leq x \leq \frac{3}{2}$

c) no solution d) $x = \frac{3}{2}$

6. a) $2 - \sqrt{7} < x < 2 + \sqrt{7}$ b) $\frac{3 - \sqrt{29}}{2} \leq x \leq \frac{3 + \sqrt{29}}{2}$

c) $x \leq -2 - \sqrt{10}$ or $x \geq -2 + \sqrt{10}$

d) $\frac{-11 - \sqrt{93}}{2} \leq x \leq \frac{-11 + \sqrt{93}}{2}$

7. a) $x = 0$ or $x = -6$ b) $x < -6$ or $x > 0$

c) $-5 \leq x \leq -1$

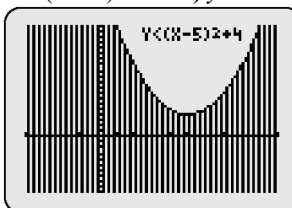
BLM 9-6 Section 9.3 Extra Practice

1. a) B and D b) A and B c) B and C d) B and C

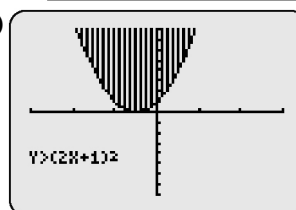
2. a) $y \leq (x - 3)(x + 2)$ b) $y \geq x^2 + 8x + 12$

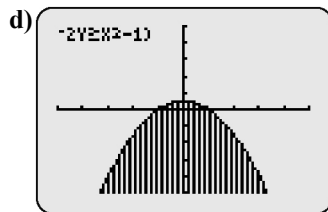
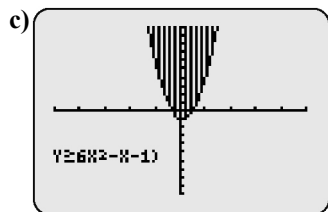
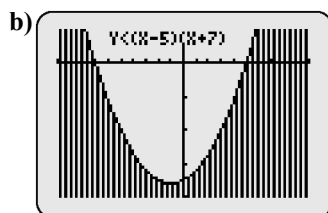
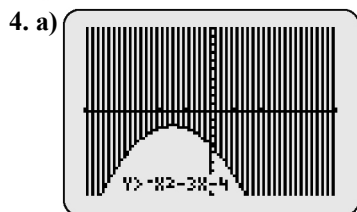
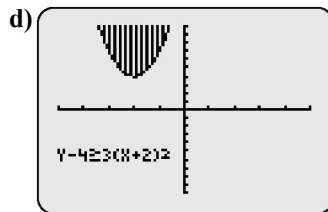
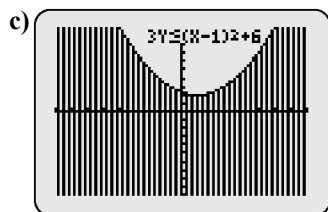
c) $y \leq -2(x + 1)^2 + 5$ d) $y \geq 2x^2 - 3x + 4$

3. a)



b)





5. $10x^2 + 9y - 90 < 0$ or $y < -\frac{10}{9}x^2 + 10$

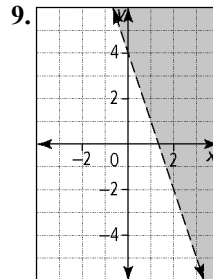
BLM 9-7 Chapter 9 Test

1. B 2. D 3. D 4. C 5. A

6. Example: When the point is substituted into the inequality, it makes a true statement. Shade the half-plane containing the point.

7. Example: The point (0, 0) lies on the boundary. It cannot be used to determine the solution half-plane.

8. Example: For a quadratic inequality in one variable, the solution contains only x -values or is an interval of x -values. For a quadratic inequality in two variables, the solution is a shaded region on the graph.



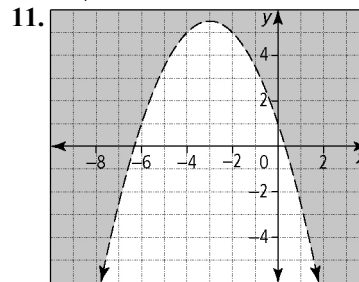
Example: Test point (2, 2):

$$2 > -3(2) + 4$$

$$2 > -2$$

The test point satisfies the inequality, so the half-plane to the right of the boundary should be shaded.

10. $\{x \mid -\sqrt{2} - 3 \leq x \leq \sqrt{2} - 3, x \in \mathbb{R}\}$



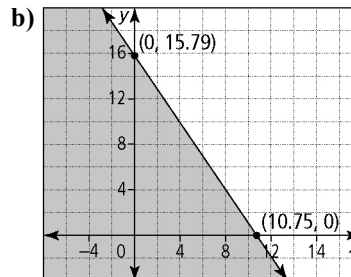
Example: Test point (0, 3):

$$3 > -\frac{1}{2}(0)^2 - 3(0) + 1$$

$$3 > 1$$

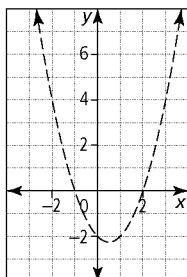
The test point satisfies the inequality, so the region above the parabola should be shaded.

12. a) $13.95x + 9.50y \leq 150$, where x is the number of tickets for adults and y is the number of tickets for children

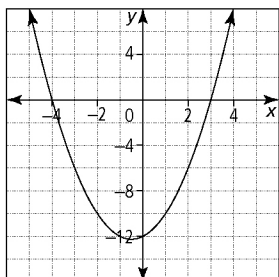


c) Example: The number of tickets must be a whole number. The number of tickets can be various combinations of 0 to 10 adult tickets and 0 to 15 children's tickets, where the total cost does not go over \$150.

13. a) Example: $x^2 - x - 2 < 0$



b) Example: $x^2 + x - 12 \geq 0$



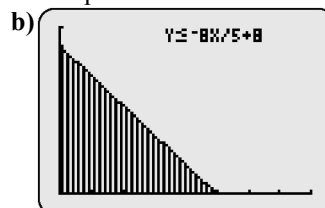
14. $\{P \mid 30 < P < 70, P \in \mathbb{R}\}$

BLM U4-3 Unit 4 Test

1. C 2. B 3. C 4. A 5. B

6. 2.4 7. $\frac{5}{4}$ or 1.25 8. 5

9. a) $5m + 8v \leq 40$, where m is the number of movies rented per month and v is the number of video games rented per month



c) Example: The number of movies or games must be whole numbers. The number of movies rented must be fewer than or equal to 8 and the number of video games rented must be fewer than or equal to 5.

10. a) (2, 1) and (5, 4)

b) Example: The x -coordinate is halfway between 2 and 5, so it is 3.5. Substitute this value into the quadratic equation to determine the y -coordinate to be 6.625. So, the coordinates of vertex C are (3.5, 7).

11. Solutions should include one of the following strategies: case analysis, roots and test points, or sign analysis. $\{x \mid \frac{2}{3} < x < \frac{5}{2}, x \in \mathbb{R}\}$

