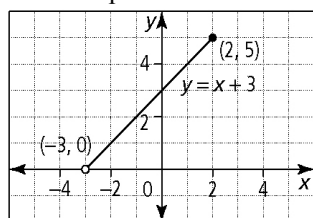


Chapter 2 BLM Answers

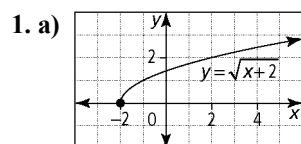
BLM 2-1 Prerequisite Skills

1. a) $\sqrt[3]{x^2}$ b) $3\sqrt{5}$ c) $\frac{1}{48\sqrt{6}} = \frac{\sqrt{6}}{288}$ d) $\sqrt{g^3}$
2. a) $x^{\frac{5}{2}}$ b) x c) $(xy)^{\frac{2}{3}}$ d) $a^3by^2(xy)^{\frac{1}{2}}$
3. a) $\sqrt{54}$ b) $\sqrt[3]{250}$ c) $-\sqrt{80}$
4. a) $2\sqrt{10}$ b) $a\sqrt[3]{18}$ c) $-5b^4\sqrt{3b}$ d) $3x^3y^2\sqrt[3]{2}$
5. a) 15 b) 5 c) 70 d) 20
6. a) $3\sqrt{2}$ b) $-6x^4$ c) $97 - 56\sqrt{3}$
- d) $3x + \sqrt{xy} - 10y$
7. a) $x \geq 0$ b) $x \geq 4$ c) $x > -2$ and $x \neq 0$ d) $z \geq 0$
- e) $x \geq -\frac{1}{3}$ f) $d \geq 1$
8. a) False; $\sqrt{25} = 5$ b) False; $(-3)^2 = 9$
- c) False; $-2^2 = -4$
9. a) $x = \frac{16}{3}$ b) $x = 6$ c) $x \in \mathbb{R}$ d) $y = 8$ or $y = -3$
10. a) domain: $[-1, 2)$; range: $[-3, 4)$
- b) domain: $[0, \infty)$; range: $[0, \infty)$
11. a) $[-2, \infty)$ b) $(-5, 3]$ c) $\{x \mid 1.4 \leq x \leq 6, x \in \mathbb{R}\}$
- d) $\{x \mid x \leq 4, x \in \mathbb{R}\}$
12. Example:

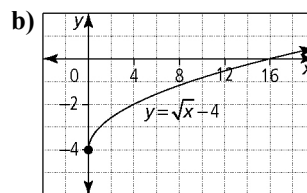


13. a) $n = \frac{12}{11}$ b) $n = -1, \frac{3}{2}$ c) $2 \pm \sqrt{10}$

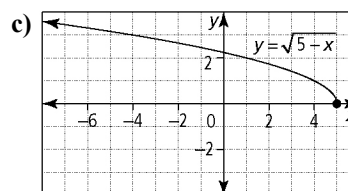
BLM 2-2 Section 2.1 Extra Practice



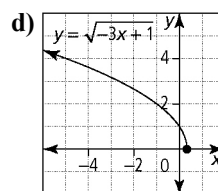
domain: $\{x \mid x \geq -2, x \in \mathbb{R}\}$; range: $\{y \mid y \geq 0, y \in \mathbb{R}\}$



domain: $\{x \mid x \geq 4, x \in \mathbb{R}\}$; range: $\{y \mid y \geq 0, y \in \mathbb{R}\}$



domain: $\{x \mid x \leq 5, x \in \mathbb{R}\}$; range: $\{y \mid y \geq 0, y \in \mathbb{R}\}$



domain: $\{x \mid x \leq \frac{1}{3}, x \in \mathbb{R}\}$; range: $\{y \mid y \geq 0, y \in \mathbb{R}\}$

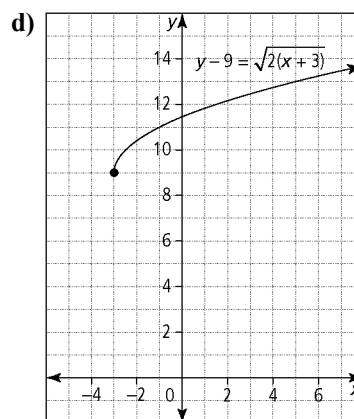
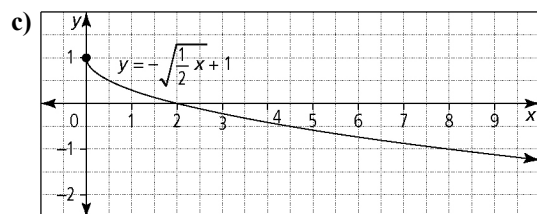
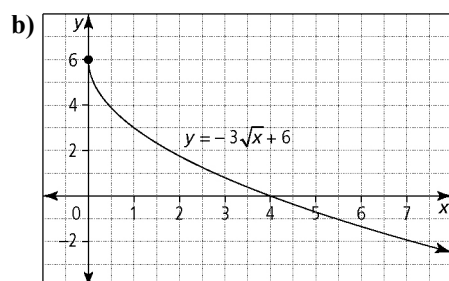
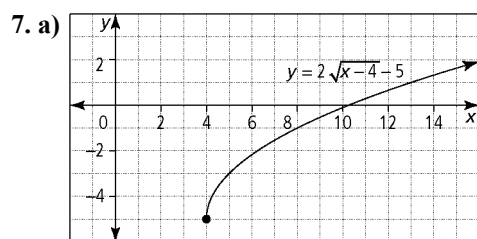
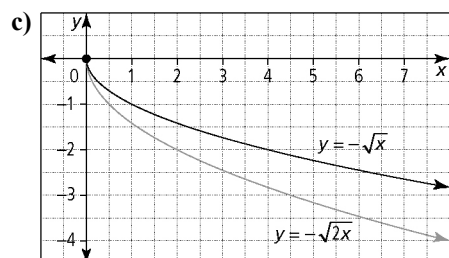
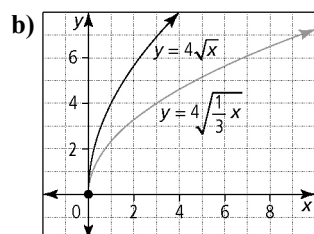
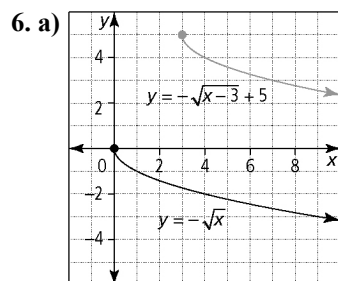
2. a) vertical stretch by a factor of 3, translation right 5 units; domain: $\{x \mid x \geq 5, x \in \mathbb{R}\}$; range: $\{y \mid y \geq 0, y \in \mathbb{R}\}$
- b) vertical reflection in the x -axis, translation up 7 units; domain: $\{x \mid x \geq 0, x \in \mathbb{R}\}$; range: $\{y \mid y \leq 7, y \in \mathbb{R}\}$
- c) vertical stretch by a factor of 0.25, horizontal stretch by a factor of 4, translation down 3 units; domain: $\{x \mid x \geq 0, x \in \mathbb{R}\}$; range: $\{y \mid y \geq -3, y \in \mathbb{R}\}$
- d) horizontal reflection in the y -axis, translation left 1 unit, translation down 5 units; domain: $\{x \mid x \leq -1, x \in \mathbb{R}\}$; range: $\{y \mid y \geq -5, y \in \mathbb{R}\}$
3. a) D b) A c) C d) B

4. a) $y = 3\sqrt{0.5x}$ b) $y = \sqrt{-(x+2)} + 3$

c) $y = -\sqrt{3x} - 7$ d) $y = 5\sqrt{4(x-6)}$

5. a) vertical stretch by a factor of 5, translation down 2 units, translation left 7 units
- b) vertical stretch by a factor of 4, reflection in the x -axis, reflection in the y -axis, translation up 8 units
- c) horizontal stretch by a factor of 4, translation right 1 unit
- d) horizontal stretch by a factor of 3, translation down 3 units, translation left 4 units





8. a) domain: $\{x \mid x \leq 0, x \in \mathbb{R}\}$; range: $\{y \mid y \geq -4, y \in \mathbb{R}\}$ b) domain: $\{x \mid x \geq 4, x \in \mathbb{R}\}$; range: $\{y \mid y \geq 0, y \in \mathbb{R}\}$ c) domain:

$\{x \mid x \geq 4, x \in \mathbb{R}\}$; range: $\{y \mid y \leq 4, y \in \mathbb{R}\}$ d) domain: $\{x \mid x \geq 0, x \in \mathbb{R}\}$; range:

$\{y \mid y \leq 0, y \in \mathbb{R}\}$ 9. a) $y = 2\sqrt{x-7} + 3$ b) $y = 2\sqrt{-(x-3)}$

c) $y = \sqrt{0.5(x+5)}$

10. a) reflection in the y -axis, translation left 7 units

b) horizontal stretch by a factor of $\frac{1}{2}$, translation

right 3 units, translation up 5 units

c) reflection in the y -axis, translation right 5 units, translation up 7 units

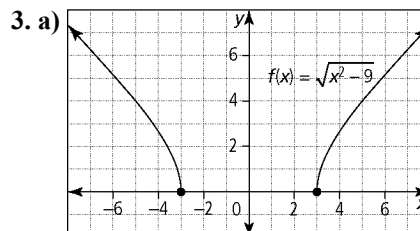
BLM 2-4 Section 2.2 Extra Practice

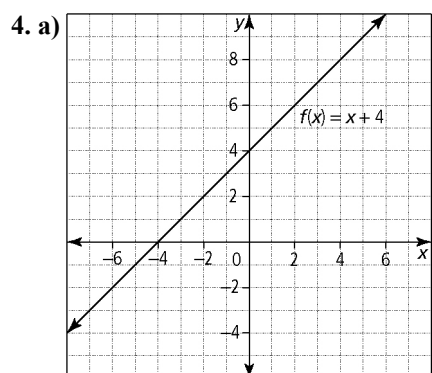
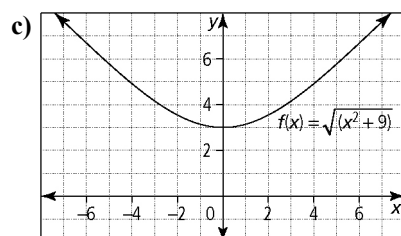
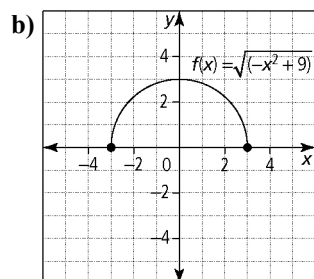
1.

x	$f(x)$	$\sqrt{f(x)}$
-2	16	4
-1	8	2.83
0	4	2
1	1.96	1.4
2	1	1

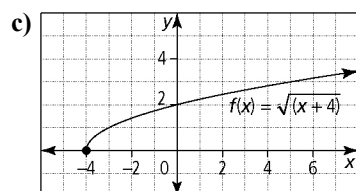
2. a) (9, 3.74) b) (p, \sqrt{r}) c) (-2, 2.65)

d) No corresponding point exists.

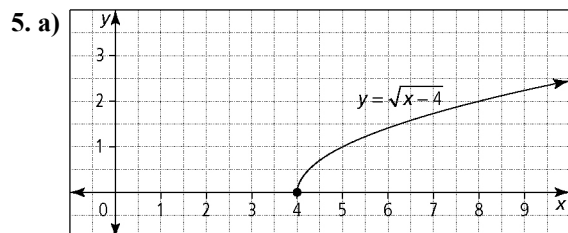




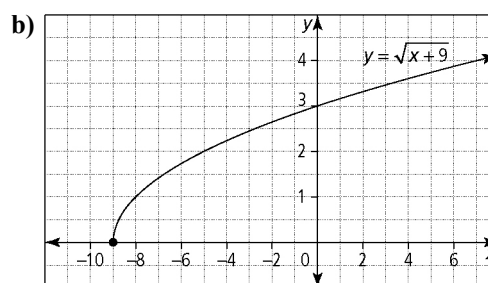
b) domain: $\{x \mid x \in \mathbb{R}\}$; range: $\{y \mid y \in \mathbb{R}\}$



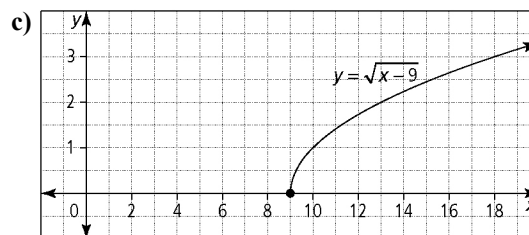
d) domain: $\{x \mid x \geq -4, x \in \mathbb{R}\}$;
range: $\{y \mid y \geq 0, y \in \mathbb{R}\}$



domain: $\{x \mid x \geq 4, x \in \mathbb{R}\}$; range: $\{y \mid y \geq 0, y \in \mathbb{R}\}$



domain: $\{x \mid x \geq -9, x \in \mathbb{R}\}$; range: $\{y \mid y \geq 0, y \in \mathbb{R}\}$



domain: $\{x \mid x \geq 9, x \in \mathbb{R}\}$; range: $\{y \mid y \geq 0, y \in \mathbb{R}\}$

6. a) $y = x + 5$: domain: $\{x \mid x \in \mathbb{R}\}$,

range: $\{y \mid y \in \mathbb{R}\}$; $y = \sqrt{x + 5}$: domain:

$\{x \mid x \geq -5, x \in \mathbb{R}\}$, range: $\{y \mid y \geq 0, y \in \mathbb{R}\}$

b) $y = 3x - 9$: domain: $\{x \mid x \in \mathbb{R}\}$, range:

$\{y \mid y \in \mathbb{R}\}$; $y = \sqrt{3x - 9}$: domain: $\{x \mid x \geq 3, x \in \mathbb{R}\}$,

range: $\{y \mid y \geq 0, y \in \mathbb{R}\}$

c) $y = -x - 10$: domain:

$\{x \mid x \in \mathbb{R}\}$, range: $\{y \mid y \in \mathbb{R}\}$; $y = \sqrt{-x - 10}$:

domain: $\{x \mid x \leq -10, x \in \mathbb{R}\}$,

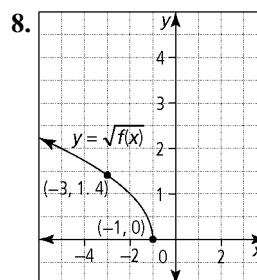
range: $\{y \mid y \geq 0, y \in \mathbb{R}\}$

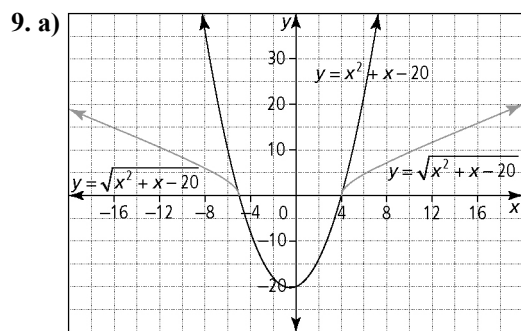
7. a) domain: $\{x \mid x \leq -4 \text{ and } x \geq 4, x \in \mathbb{R}\}$;

range: $\{y \mid y \geq 0, y \in \mathbb{R}\}$

b) domain: $\{x \mid x \in \mathbb{R}\}$; range: $\{y \mid y \geq \sqrt{5}, y \in \mathbb{R}\}$

c) domain: $\{x \mid x \in \mathbb{R}\}$; range: $\{y \mid y \geq \sqrt{18}, y \in \mathbb{R}\}$





b) Example: The graph of $y = x^2 + x - 20$ has y -values that are less than zero for values of x between -5 and 4 . Therefore, $y = \sqrt{x^2 + x - 20}$ is undefined for this interval of x .

10. a) Example: all points that have a y -value of 0 or 1

b) Example: all points that have a negative y -value

BLM 2-5 Section 2.3 Extra Practice

1. a) $x = 3$ b) $x = 0$ c) no solution d) $x = -1$

2. Example: In each case, graph the single function and identify the x -intercepts or graph the set of functions and identify the x -value of the point of intersection.

a) $y = \sqrt{5x^2 + 11} - x - 5$ or $y = \sqrt{5x^2 + 11}$
 $y = x + 5$

b) $y = \sqrt{2x^2 - 7} - x - 3$ or $y = \sqrt{2x^2 - 7}$
 $y = x + 3$

c) $y = \sqrt{13 - 4x^2} - 2 + x$ or $y = \sqrt{13 - 4x^2}$
 $y = 2 - x$

d) $y = \sqrt{-2x^2 + 9} + x - 3$ or $y = \sqrt{-2x^2 + 9}$
 $y = 3 - x$

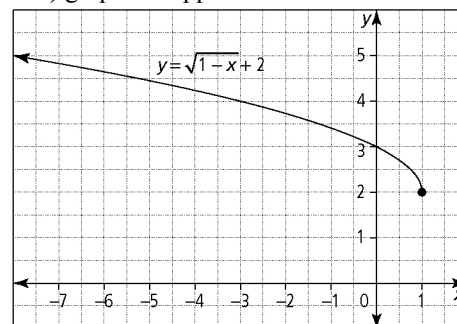
3. a) $x = 4$ and $x = -4$ b) $x = -9$ c) $x = 2$ and $x = -7$
d) $x = -3$

4. a) $x = 4$ b) no solution c) $x = 6$ d) $x = 26$

5. a) $x = 2$ b) $x = 12$ c) $x = 5$ d) $x = 6$

6. a) $x = 4.6$ b) $x = 3.6$ c) $x = -5.5$ d) $x = 9.8$

7. a) graphical approach:



algebraic approach:

$$\begin{aligned}\sqrt{1-x} + 2 &= 0 \\ \sqrt{1-x} + 2 - 2 &= 0 - 2 \\ \sqrt{1-x} &= -2\end{aligned}$$

This result is not possible because a square root cannot equal a negative value.

b) Example: Yes; isolate the radical. If it is equal to a negative value, then the equation has no solution.

8. 11 m

9. a) 3.7 cm b) 137 cm²

10. $x = 3$

BLM 2-7 Chapter 2 Test

1. A

2. B

3. B

4. D

5. B

6. $(8, -y + 3)$ or $(8, 1)$

7. $(-5, 0)$, $(5, 0)$

8. $g(x) = \sqrt{2(x+6)}$

9. a) $f(x) = \sqrt{4(x-1)} + 2$ b) $g(x) = 2\sqrt{x-1} + 2$

10. a) vertical stretch by a factor of 2 about the x -axis, translation down 4 units, translation right 3 units

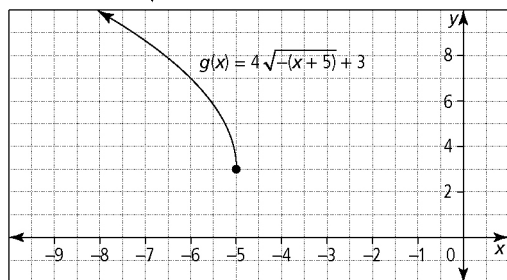
b) domain: $\{x \mid x \geq 3, x \in \mathbb{R}\}$;

range: $\{y \mid y \geq -4, y \in \mathbb{R}\}$

c) The solutions to $0 = 2\sqrt{x-3} - 4$ are the x -intercepts of the graph of $y = 2\sqrt{x-3} - 4$.



11. $g(x) = 4\sqrt{-(x+5)} + 3$



12. $\frac{1}{9}$

13. **a)** $x = 3$ **b)** Example: Since Mary used an algebraic method, she must verify her answers. Only $x = 3$ is a solution. John determined the point of intersection, but only the x -coordinate of the point of intersection is the solution.

14. **a)** $x = -\frac{1}{7}$, $x = 1$ **b)** There are no restrictions on the variable.

15. 83.2 m

