Chapter 10 BLM Answers

BLM 10–2 Section 10.1 Extra Practice

1. a) $h(x) = \sqrt{x-4} + 12$

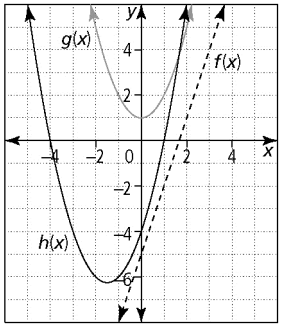
b) $h(x) = 7x - 4$

c) $h(x) = 2x^2 - 4x + 3$

d) $h(x) = x^2 + x + 17$

2. a) $h(x) = x^2 + 3x - 4$

b)



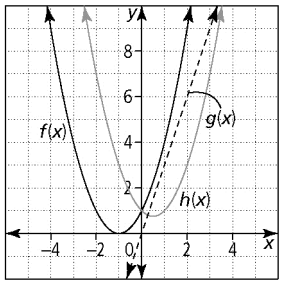
c) domain: $\{x \mid x \in \mathrm{R}\}$; range: $\{y \mid y \geq -6.25, \in \mathrm{R}\}$

3. a) $h(x) = 10 - |x+3|$ **b)** $h(x) = x - 13$

c) $h(x) = -x^2 + 4x + 8$ **d)** $h(x) = -x^2 + 8x - 10$

4. a) $h(x) = x^2 - x + 1$

b)



c) domain: $\{x \mid x \in \mathrm{R}\}$; range: $\{y \mid y \geq 0.75, y \in \mathrm{R}\}$

5. a) $y = x^2 + \sqrt{x-2} - 6$; domain: $\{x \mid x \geq 2, x \in \mathrm{R}\}$; range: $\{y \mid y \geq -2, y \in \mathrm{R}\}$

b) $y = \sqrt{x-2} - 2x + 1$; domain: $\{x \mid x \geq 2, x \in \mathrm{R}\}$; range: $\{y \mid y \leq -2\frac{7}{8}, y \in \mathrm{R}\}$ Note: The actual range is difficult to determine from the graph, and the best estimate for range may be $\{y \mid y \leq -3, y \in \mathrm{R}\}$.

c) $y = 2x - \sqrt{x-2} - 1$; domain: $\{x \mid x \geq 2, x \in \mathrm{R}\}$; range: $\{y \mid 2\frac{7}{8} \leq y, y \in \mathrm{R}\}$ Note: The actual range is difficult to determine from the graph, and the best estimate for range may be $\{y \mid 3 \leq y, y \in \mathrm{R}\}$

d) $y = x^2 + 2x - 7$; domain: $\{x \mid x \in \mathrm{R}\}$; range: $\{y \mid y \geq -8, y \in \mathrm{R}\}$

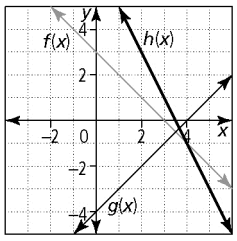
6. a) $h(x) = x^2 + 4x - 2$; 10

b) $m(x) = x^2 - 4x - 12$; -15

c) $p(x) = x^2 + 4x - 2$; 3

7. a) 4 **b)** 6 **c)** 8 **d)** 8

8.



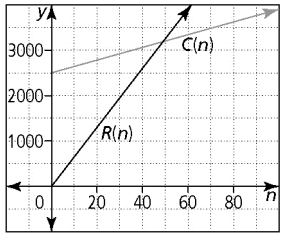
9. a) $g(x) = x^2 + 2x + 2$ **b)** $g(x) = \sqrt{x-7} - 3x + 5$

c) $g(x) = 9$ **d)** $g(x) = 2x^2 - 10x + 8$

10. a) $C(n) = 2500 + 14n$

$R(n) = 65n$

b)

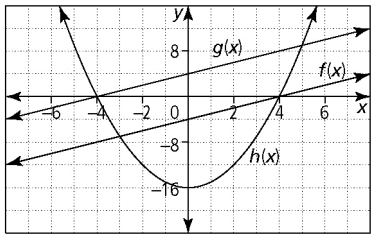


c) 50 people

BLM 10–3 Section 10.2 Extra Practice

1. a) $h(x) = 2x^2 + x - 15$
b) $h(x) = 6x^2 - 7x - 3$
c) $h(x) = x\sqrt{x-4} + 2\sqrt{x-4}$
d) $h(x) = \left(\sqrt{x+1}\right)\left(\sqrt{3-x}\right)$

2. a) $h(x) = x^2 - 16$
b)



c) domain: $\{x \mid x \in \mathrm{R}\}$; range: $\{y \mid y \geq -16, y \in \mathrm{R}\}$

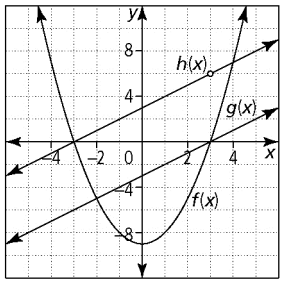
3. a) $h(x) = \dfrac{x+3}{2x-5}$; domain: $\left\{x \,\middle|\, x \neq \dfrac{5}{2}, x \in \mathrm{R}\right\}$;
range: $\{y \mid y \neq \dfrac{1}{2}, y \in \mathrm{R}\}$

b) $h(x) = \dfrac{2x-3}{3x+1}$; domain: $\left\{x \,\middle|\, x \neq -\dfrac{1}{3}, x \in \mathrm{R}\right\}$;
range: $\{y \mid y \neq \dfrac{2}{3}, y \in \mathrm{R}\}$

c) $h(x) = \dfrac{\sqrt{x-4}}{x+2}$; domain: $\{x \mid x \geq 4, x \in \mathrm{R}\}$;
range: $\{y \mid 0 \leq y \leq \dfrac{\sqrt{6}}{12}, y \in \mathrm{R}\}$

d) $h(x) = \dfrac{\sqrt{x+1}}{\sqrt{3-x}}$; domain: $\{x \mid -1 \leq x < 3, x \in \mathrm{R}\}$;
range: $\{y \mid 0 \leq y, y \in \mathrm{R}\}$

4. a) $h(x) = x + 3, x \neq 3$
b)



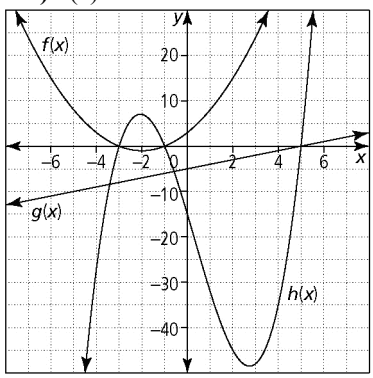
c) domain: $\{x \mid x \neq 3, x \in \mathrm{R}\}$; range: $\{y \mid y \neq 6, y \in \mathrm{R}\}$

5. a) $y = 2x^2 + 3x + 1$; domain: $\{x \mid x \in \mathrm{R}\}$;
range: $\{y \mid y \geq -0.125, y \in \mathrm{R}\}$
b) $y = 2x^3 + 9x^2 + 10x + 3$;
domain: $\{x \mid x \in \mathrm{R}\}$; range: $\{y \mid y \in \mathrm{R}\}$

c) $y = \dfrac{2x+1}{x+1}$; domain: $\{x \mid x \neq -1, x \in \mathrm{R}\}$;
range: $\{y \mid y \neq 2, y \in \mathrm{R}\}$

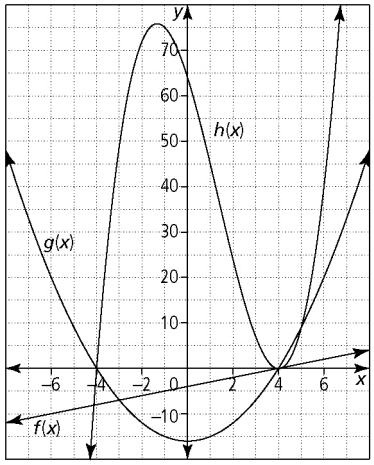
d) $y = x + 3$; domain: $\{x \mid x \neq -\dfrac{1}{2}, x \in \mathrm{R}\}$;
range: $\{y \mid y \neq 2.5, y \in \mathrm{R}\}$

6. a) $h(x) = x^3 - x^2 - 17x - 15$



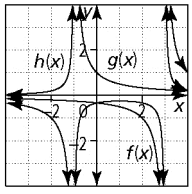
domain: $\{x \mid x \in \mathrm{R}\}$; range: $\{y \mid y \in \mathrm{R}\}$

b) $h(x) = x^3 - 4x^2 - 16x + 64$



domain: $\{x \mid x \in \mathrm{R}\}$; range: $\{y \mid y \in \mathrm{R}\}$

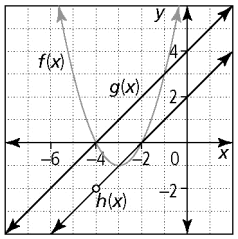
c) $h(x) = \dfrac{1}{x^2 - 2x - 3}$



domain: $\{x \mid x \neq -1, 3, x \in \mathrm{R}\}$; range:
$\{y \mid y > 0 \text{ or } y \leq -\dfrac{1}{4}, y \in \mathrm{R}\}$

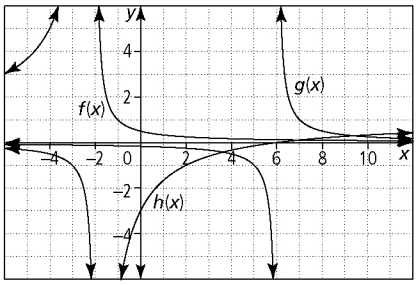
7. a) 12 **b)** −3 **c)** −4 **d)** 0.8 **e)** 0.2 **f)** 5

8. a) $h(x) = x + 2$



domain: $\{x \mid x \neq -4, x \in \mathrm{R}\}$; range: $\{y \mid y \neq -2, y \in \mathrm{R}\}$

b) $h(x) = \dfrac{x-6}{x+2}$



domain: $\{x \mid x \neq -2, 6, x \in \mathrm{R}\}$;
range: $\{y \mid y \neq -2, 1, \text{or } 6, y \in \mathrm{R}\}$

9. a) $g(x) = x + 3$ **b)** $g(x) = x + 2$

10. a) $y = x^3 - 8x^2 + 11x + 20$

b) $y = \dfrac{x^2 - 4x - 5}{x - 4}$ **c)** $y = \dfrac{2x - 4}{x - 4}$

BLM 10–4 Section 10.3 Extra Practice

1. a) 10 **b)** 40 **c)** 29 **d)** –1

2. a) –8 **b)** –8 **c)** 184 **d)** 14

3. a) 7 **b)** 0 **c)** –1 **d)** –2

4. a) 4 **b)** 6 **c)** 5 **d)** 3

5. a) $y = 2a^2 + 3$

b) $y = 4a^2 - 36a + 87$

c) $y = 2x^2 + 3$

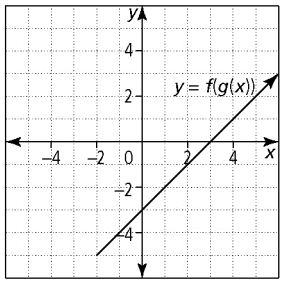
d) $y = 4x^2 - 36x + 87$

e) $y = 4x - 27$

f) $y = x^4 + 12x^2 + 42$

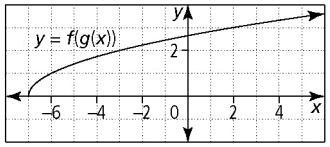
6. a) $y = x - 3$

b)



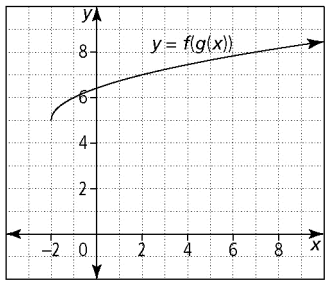
c) domain: $\{x \mid x \geq -2, x \in \mathrm{R}\}$; range: $\{y \mid y \geq -5, y \in \mathrm{R}\}$

7. a)



domain: $\{x \mid x \geq -7, x \in \mathrm{R}\}$; range: $\{y \mid y \geq 0, y \in \mathrm{R}\}$

b)



domain: $\{x \mid x \geq -2, x \in \mathrm{R}\}$; range: $\{y \mid y \geq 5, y \in \mathrm{R}\}$

8. a) $f(g(x)) = 3x^2 + 5$;
$g(f(x)) = 9x^2 - 6x + 3$

b) $f(g(x)) = 25x^2 + 70x + 45$;
$g(f(x)) = 5x^2 - 13$

c) $f(g(x)) = x^4 + 2x^3 + x^2 - x$;
$g(f(x)) = x^4 - 2x^3 + x^2 + x$

d) $f(g(x)) = x - 5$;
$g(f(x)) = \sqrt{x^2 - 5}$

9. a) $g(x) = \sqrt{x - 4}$ **b)** $g(x) = x + 3$

10. a) $W(N(t)) = 3\sqrt{100 + 25t}$

b) domain: $\{t \mid t \geq 0, t \in \mathrm{R}\}$;
range: $\{W \mid W \geq 30, W \in \mathrm{R}\}$

c) 57 workers; 350 chairs