pg. 394 #3-42 x3, 4, 11, 48, 59

3. $g(x) - f(x)$
$x^2 - (3x+5)$
$x^2 - 3x - 5$

15. $f(x) - g(x)$
$(2x^2 + x - 3) - (x - 1)$
$2x^2 + x - 3 - x + 1$
$2x^2 - 2$
domain $-\infty < x < \infty$ (book calls this "all real numbers")

21. $(g \circ f)(x)$ $\quad g(x) = |x + 5|$

$f(x) = x^2$

$(g \circ f)(x) = |x^2 + 5|$ will always be positive if x is real, so abs. val. unnecessary.

$(g \circ f)(x) = x^2 + 5$

$(g \circ f)(3) = 3^2 + 5$
$= 9 + 5$
$= 14$

$(g \circ f)(-2) = (-2)^2 + 5$
$= 4 + 5$
$= 9$

24. $(h \circ g)(-2)$ $\quad h(x) = (x)^2 + 4$ $\quad (h \circ g)(x) = (2x)^2 + 4$
$= 4x^2 + 4$

$g(x) = 2x$

$(h \circ g)(-2) = 4(-2)^2 + 4$
$= 4(4) + 4$
$= 16 + 4$
$= 20$

33. $(g \circ f)(0) = g(x) = (x) - 3$ $\quad (g \circ f)(x) = x^2 - 3$ $\quad (g \circ f)(0) = 0^2 - 3$
$= -3$

$f(x) = x^2$

48. $-2g(x) + f(x)$

$-2(x^2 - 3x + 2) + (2x + 5)$

$-2x^2 + 6x - 4 + 2x + 5$

$-2x^2 + 8x + 1$

59. $g(f(4))$ $\quad g(x) = 3x + 2$

$f(x) = \frac{x-2}{3}$

$= 3\left(\frac{x-2}{3}\right) + 2$

$= x - 2 + 2$

$= x$

$g(f(4)) = -4$

Answers for Lesson 7-6, pp. 394–398 Exercises

1. $x^2 + 3x + 5$
2. $x^2 - 3x - 5$
3. $-x^2 + 3x + 5$
4. $3x^3 + 5x^2$
5. $\frac{3x + 5}{x^2}$
6. $\frac{x^2}{3x + 5}$
7. $x^2 + 3x + 5$
8. $-x^2 + 3x + 5$
9. $x^2 - 3x - 5$
10. $3x^3 + 5x^2$
11. $\frac{3x + 5}{x^2}$
12. $\frac{x^2}{3x + 5}$
13. $2x^2 + 2x - 4$; domain: all real numbers
14. $-2x^2 + 2$; domain: all real numbers
15. $2x^2 - 2$; domain: all real numbers
16. $2x^3 - x^2 - 4x + 3$; domain: all real numbers
17. $2x + 3$; domain: all real numbers except 1
18. $\frac{1}{2x + 3}$; domain: all real numbers except $-\frac{3}{2}$ and 1
19. $27x^2$, domain: all real numbers; 3, domain: all real numbers except 0
20. $2x + 3$; 9, -1
21. $x^2 + 5$; 14, 9
22. 8
23. 104
24. 20
25. 16
26. 8
27. 10
28. 12
29. 68
30. 404
31. 1
32. 25
33. -3
34. 9
35. 9.25
36. 0.25
37. 6.25
38. -2.75
39. $c^2 - 6c + 9$
40. $c^2 - 3$
41. $a^2 + 6a + 9$
42. $a^2 - 3$