Answers for Lesson 7-3 Exercises

1. $6\sqrt{6}$ **2.** $4\sqrt[3]{3}$

3. cannot combine **4.** $-2\sqrt{x}$

5. cannot combine **6.** $5\sqrt[3]{x^2}$

7. $33\sqrt{2}$ **8.** $13\sqrt{5}$ **9.** $7\sqrt{2}$

10. $5\sqrt[3]{2}$ **11.** $9\sqrt[3]{3} - 6\sqrt[3]{2}$ **12.** $2\sqrt[4]{2} + 2\sqrt[4]{3}$

13. $8 + 4\sqrt{5}$ **14.** $23 + 7\sqrt{7}$ **15.** $63 - 38\sqrt{2}$

16. $8 + 2\sqrt{15}$ **17.** $49 + 12\sqrt{13}$ **18.** $38 + 12\sqrt{10}$

19. 14 **20.** 4 **21.** -40

22. -2 **23.** $-2 + 2\sqrt{3}$ **24.** $\frac{12\sqrt{3} + 8}{23}$

25. $13 + 7\sqrt{3}$ **26.** $\frac{11 + 8\sqrt{2}}{-14}$ **27.** $13\sqrt{2}$

28. $8\sqrt{3}$ **29.** $48\sqrt{2x}$ **30.** $5\sqrt{3} - 4\sqrt{2}$

31. $33y\sqrt{6}$ **32.** $-2\sqrt[3]{2}$ **33.** $-11 + \sqrt{21}$

34. $8 + \sqrt{10}$ **35.** $17 + 31\sqrt{2}$ **36.** $-36 - 15\sqrt{2}$

37. $x + 3\sqrt{3x} + 6$ **38.** $8y - 22\sqrt{2y} + 30$

39. $\frac{89 + 42\sqrt{3}}{-239}$ **40.** $2\sqrt{3} - \sqrt{2}$

41. $\frac{\sqrt{3} - \sqrt{7}}{2}$ **42.** $\frac{2 + 3\sqrt[3]{4}}{2}$

43. $\frac{x + 5\sqrt[4]{x^3}}{x}$ **44.** $2\sqrt[3]{2} - \sqrt[3]{12}$

45. The reciprocal is $\frac{-1 + \sqrt{5}}{2}$, which is one less than $\frac{1 + \sqrt{5}}{2}$.

46. *a* must be twice a perfect square.

47. Answers may vary. Sample: Without simplifying first, you must estimate three separate square roots, and then add the estimates. If they are first simplified, then they can be combined as $13\sqrt{2}$. Then only one square root need be estimated.

48. $\frac{60 - 20\sqrt{2}}{7}$ s, or about 4.53 s

49. Answers may vary.
Samples: $(\sqrt{7} + 2)(\sqrt{7} - 2)$; $(2\sqrt{2} + \sqrt{5})(2\sqrt{2} - \sqrt{5})$

50. D **51.** $-\frac{1}{2}$ **52.** $4\sqrt{3}$

53. ($a = 0$ and $b \geq 0$) or ($b = 0$ and $a \geq 0$)

54. In the second step the exponent was incorrectly distributed:
$(a - b)^x \neq a^x - b^x$.

55. a. m and n can be any positive integers.

b. m must be even or n must be odd.

c. m must be even, and n can be any positive integer.