[09-09-04-L11]
ODDS

5.3 Exercises

Simplify each of the following. Assume that all variables represent positive real numbers. See Examples 3–5.

1. $\sqrt{18}$
2. $-\sqrt{48}$
3. $\sqrt{150}$
4. $\sqrt{300}$
5. $\sqrt{76}$
6. $\sqrt{52}$
7. $\sqrt[3]{16}$
8. $\sqrt[3]{250}$
9. $\sqrt[3]{128}$
10. $\sqrt[3]{375}$
11. $\sqrt[4]{32}$
12. $\sqrt[4]{243}$
13. $-\sqrt[4]{1250}$
14. $-\sqrt[4]{512}$
15. $\sqrt[5]{128}$
16. $\sqrt[5]{486}$
17. $\sqrt{\frac{72}{25}}$
18. $\sqrt{\frac{80}{9}}$
19. $\sqrt[3]{\frac{32}{125}}$
20. $\sqrt[3]{\frac{81}{1000}}$
21. $\sqrt{100y^{10}}$
22. $\sqrt{256z^6}$
23. $-\sqrt[3]{8k^9}$
24. $-\sqrt[3]{27y^{15}}$
25. $-\sqrt{144m^{10}z^2}$
26. $-\sqrt{4k^2z^{18}}$
27. $-\sqrt[3]{-125m^9b^{18}c^{24}}$
28. $\sqrt[3]{-216y^{12}x^3z^{18}}$
29. $\sqrt[4]{\frac{1}{16}m^{12}x^{16}}$
30. $\sqrt[4]{\frac{81}{256}k^4m^8}$
31. $\sqrt{75y^3}$
32. $\sqrt{200z^3}$
33. $\sqrt{7x^5y^6}$
34. $\sqrt{12k^9p^{12}}$
35. $\sqrt[3]{8z^9r^{12}}$
36. $\sqrt[3]{125k^{15}n^9}$
37. $\sqrt[3]{24z^5x^9}$
38. $\sqrt[3]{81w^7y^8}$
39. $\sqrt[4]{16a^8b^{12}}$
40. $\sqrt[4]{81z^{16}y^{20}}$
41. $\sqrt[4]{32k^5m^{10}}$
42. $\sqrt[4]{162r^{15}s^{10}}$
43. $\sqrt{\frac{m^9}{16}}$
44. $\sqrt{\frac{y^{15}}{100}}$
45. $\sqrt[3]{\frac{y^{10}}{27}}$
46. $\sqrt[3]{\frac{r^{26}}{125}}$
47. $\sqrt[4]{\frac{t^{23}}{16}}$
48. $-\sqrt[4]{\frac{8a^9}{81}}$

77. $x^{-3/2}$ 79. $x^{9/4}$ 81. $(m+r)^{1/2}$ 83. $(m^3+r^3)^{1/4}$ 85. $(m-5n)^{1/3}$ 87. $(9m^2p)^{1/3}$
89. $2m^{1/2}-5m^{2/3}$ 91. $|m^3|$ or $m^2|m|$ 93. $4|z|$ 95. $5r^2|z^5|$ or $5r^2z^4|z|$ 97. $|r-2q|$
99. $|m-q|$ 101. $-5/|p^2-q^2|$ 103. $y^{5/6}$ 105. $m^{1/6}$ 107. $x^{1/24}$ 111. p^{11}
113. $1/(24x^8)$ 115. $s/(16r)$

Section 5.3 (page 222)
1. $3\sqrt{2}$ 3. $5\sqrt{6}$ 5. $2\sqrt{19}$ 7. $2\sqrt[3]{2}$ 9. $4\sqrt[3]{2}$ 11. $2\sqrt[4]{2}$ 13. $-5\sqrt[4]{2}$
15. $2\sqrt[5]{4}$ 17. $6\sqrt{2}/5$ 19. $2\sqrt[3]{4}/5$ 21. $10y^5$ 23. $-2k^3$ 25. $-12m^5z$
27. $5m^3b^6c^8$ 29. $m^3x^4/2$ 31. $5y\sqrt{3y}$ 33. $x^2y^3\sqrt{7x}$ 35. $2z^3r^4$ 37. $2zx^3\sqrt[3]{3z^2}$
39. $2a^2b^3$ 41. $2km^2\sqrt[4]{2km^2}$ 43. $m^4\sqrt{m}/4$ 45. $y^3\sqrt[3]{y}/3$ 47. $t^5\sqrt[4]{t^3}/2$
49. $3\sqrt{5}$ 51. $25\sqrt{7}/7$ 53. $\sqrt{35}/5$ 55. $4\sqrt{15}$ 57. $9\sqrt{5}/10$ 59. $-\sqrt{15}$
61. $\sqrt{10}/6$ 63. $8\sqrt{3k}/k$ 65. $\sqrt{5mk}/k$ 67. $5\sqrt{2my}/y^2$ 69. $-4k\sqrt{3z}/z$
71. $4p^2\sqrt{2q}/q^2$ 73. $\sqrt[3]{18}/4$ 75. $x^2\sqrt[3]{y^2}/y$ 77. $r^5\sqrt[3]{s}/s^3$ 79. $\sqrt[3]{k^2m^2}/m$
81. $\sqrt[5]{a^3b}/ab$ 83. $2\sqrt{3}$ 85. $\sqrt{m^3}$ or $m\sqrt{m}$ 87. $\sqrt{5}$ 89. $\sqrt[3]{2^4}$ or $\sqrt[3]{16}$ or $2\sqrt[3]{2}$
91. $\sqrt[6]{675}$ 93. $\sqrt[15]{864}$ 95. $\sqrt[6]{x^5}$ 97. $5\sqrt{21}/3$ feet 99. $6x^2$ 101. $11q-6q^2$
103. $16a^5-9a^2+4a$ (cannot be simplified further)