

Radical Expressions

Simplify the radical expressions.

- $\sqrt{36}$
- $-\sqrt{64}$
- $\sqrt{-16}$
- $-\sqrt{121}$
- $3\sqrt{4}$
- $23\sqrt{1}$
- $7\sqrt{25}$
- $\sqrt{\frac{4}{9}}$
- $-\sqrt{-1}$
- $21\sqrt{\frac{100}{49}}$
- $\sqrt{\frac{2}{8}}$
- $12\sqrt{\frac{20}{45}}$
- $\sqrt{7^2}$
- $\sqrt{(-9)^2}$
- $\sqrt{23^2}$
- $\sqrt{-14^2}$
- $\sqrt{\left(-\frac{17}{2}\right)^2}$
- $\sqrt{8675309^2}$
- $\sqrt{8}$
- $\sqrt{12}$
- $\sqrt{20}$
- $\sqrt{27}$
- $\sqrt{50}$
- $\sqrt{75}$
- $\sqrt{63}$
- $\sqrt{128}$
- $\sqrt{147}$
- $\sqrt{144}$
- $\sqrt{500}$
- $\sqrt{243}$
- $\sqrt{900}$
- $\sqrt{1000}$
- $5\sqrt{2} + 3\sqrt{2}$
- $\sqrt{5} + 9\sqrt{5}$
- $-24\sqrt{7} + 8\sqrt{7}$
- $\sqrt{2} + \sqrt{8}$
- $-\sqrt{12} + \sqrt{3}$
- $-\sqrt{20} - \sqrt{45}$
- $13\sqrt{8} - 26\sqrt{18}$
- $-5\sqrt{28} + 4\sqrt{63}$
- $2\sqrt{27} - 3\sqrt{50} - 5\sqrt{3} + \sqrt{32}$
- $7\sqrt{75} + 2\sqrt{45} - \sqrt{500} - 5\sqrt{12}$
- $-\sqrt{63} - \sqrt{50} + 2\sqrt{28} - 5\sqrt{72}$
- $2\sqrt{45} - 3\sqrt{18} + \sqrt{72} - \sqrt{20}$
- $3\sqrt{63} + 2\sqrt{121} - \sqrt{28} - \sqrt{81}$
- $\sqrt{2}\sqrt{2}$
- $\sqrt{7}\sqrt{7}$
- $\sqrt{501}\sqrt{501}$ (Hint: look at the previous two exercises.)
- $(2\sqrt{5})(3\sqrt{5})$
- $\sqrt{6}(9\sqrt{6})$
- $\sqrt{2}\sqrt{8}$
- $(\sqrt{3})(4\sqrt{12})$
- $\sqrt{5}(1 + \sqrt{5})$

54. $\sqrt{6}(-\sqrt{6} + \sqrt{24})$

55. $\sqrt{3}(\sqrt{7} - \sqrt{15})$

56. $\sqrt{2}(3\sqrt{6} + 5\sqrt{11})$

57. $(5\sqrt{2} + \sqrt{6})(7\sqrt{6} - 3\sqrt{2})$

58. $(2\sqrt{3} + 3\sqrt{5})^2$

59. $(\sqrt{3} - 5\sqrt{8})(2\sqrt{8} + \sqrt{3})$

60. $(4\sqrt{3} - \sqrt{2})(\sqrt{12} + 3\sqrt{2})$

61. $(3\sqrt{2} + \sqrt{6})(\sqrt{6} - 4\sqrt{2})$

62. $(\sqrt{2} - 3\sqrt{10})(\sqrt{10} + 2\sqrt{2})$

In the following exercises assume that all variables represent positive numbers.

63. $\sqrt{x^6}$

64. $\sqrt{x^2y^{10}}$

65. $\sqrt{4x^8y^4}$

66. $\sqrt{8x^2}$

67. $\sqrt{12x^6y^6}$

68. $3\sqrt{20x^8y^2}$

69. $14\sqrt{18x^2y^4z^{12}}$

70. $5x^3y^7\sqrt{24x^6}$

71. $\sqrt{x^5}$

72. $2x^4\sqrt{x^3y}$

73. $\sqrt{x^8y^7}$

74. $\sqrt{28x^2y^3z^4}$

75. $\sqrt{32x^{14}y^9z}$

76. $4x^2z\sqrt{48x^9y^4z^{16}}$

77. $5x^3y\sqrt{28x^{15}y^{10}z^3}$

78. $xyz\sqrt{125x^7y^4z^2}$

79. $-xy^2z^3\sqrt{144x^4y^8z^5}$

80. $-4x^2z\sqrt{99x^3y^{12}z^4}$

81. $\frac{\sqrt{32}}{\sqrt{8}}$

82. $\frac{\sqrt{63}}{\sqrt{7}}$

83. $\frac{-\sqrt{125}}{-\sqrt{5}}$

84. $\frac{\sqrt{24}}{-\sqrt{3}}$

85. $\frac{\sqrt{150}}{\sqrt{2}}$

86. $\frac{\sqrt{36x^7}}{\sqrt{4x^3}}$

87. $\frac{\sqrt{18x^5}}{\sqrt{2x^9}}$

88. $\frac{\sqrt{x^3}}{\sqrt{4x^5}}$

89. $\frac{\sqrt{2xy^6}}{\sqrt{32x^3y^4}}$

90. $\frac{\sqrt{x^2y^9}}{\sqrt{x^8y^4}}$

91. $\frac{\sqrt{24x^{10}y^8z^6}}{\sqrt{2x^3y^8}}$

92. $\frac{xy\sqrt{y^{13}}}{\sqrt{y^5}}$

93. $\frac{y\sqrt{x^8y}}{x^2\sqrt{xy^5}}$

94. $\frac{-z\sqrt{84x^4y^5z^8}}{x\sqrt{7x^4y^9z^3}}$

95. $\frac{y\sqrt{32x^7y^3z^8}}{z^2\sqrt{x^7y^9z^3}}$

96. $y^2\sqrt{\frac{32x^7z^2}{16x^4z^2}}$

Answers:

1. 6
2. -8
3. DNE
4. -11
5. 6
6. 23
7. 35
8. $\frac{2}{3}$
9. DNE
10. 30
11. $\frac{1}{2}$
12. 8
13. 7
14. 9
15. 23
16. DNE
17. $\frac{17}{2}$
18. 8675309
19. $2\sqrt{2}$
20. $2\sqrt{3}$
21. $2\sqrt{5}$
22. $3\sqrt{3}$
23. $5\sqrt{2}$
24. $5\sqrt{3}$
25. $3\sqrt{7}$
26. $8\sqrt{2}$
27. $7\sqrt{3}$
28. 12
29. $10\sqrt{5}$
30. $9\sqrt{3}$
31. 30
32. $10\sqrt{10}$
33. $8\sqrt{2}$
34. $10\sqrt{5}$
35. $-16\sqrt{7}$
36. $3\sqrt{2}$
37. $-\sqrt{3}$
38. $-5\sqrt{5}$
39. $-52\sqrt{2}$
40. $2\sqrt{7}$
41. $\sqrt{3} - 11\sqrt{2}$
42. $25\sqrt{3} - 4\sqrt{5}$
43. $\sqrt{7} - 35\sqrt{2}$
44. $4\sqrt{5} - 3\sqrt{2}$
45. $7\sqrt{7} + 13$
46. 2
47. 7
48. 501
49. 30
50. 54
51. 4
52. 24
53. $\sqrt{5} + 5$
54. 6
55. $\sqrt{21} - 3\sqrt{5}$
56. $6\sqrt{3} + 5\sqrt{22}$

57. $64\sqrt{3} + 12$

58. $57 + 12\sqrt{15}$

59. $-6\sqrt{6} - 77$

60. $10\sqrt{6} + 18$

61. $-2\sqrt{3} - 18$

62. $-26 - 10\sqrt{5}$

63. x^3

64. xy^5

65. $2x^4y^2$

66. $2x\sqrt{2}$

67. $2x^3y^3\sqrt{3}$

68. $6x^4y\sqrt{5}$

69. $42xy^2z^6\sqrt{2}$

70. $10x^6y^7\sqrt{6}$

71. $x^2\sqrt{x}$

72. $2x^5\sqrt{xy}$

73. $x^4y^3\sqrt{y}$

74. $2xyz^2\sqrt{7y}$

75. $4x^7y^4\sqrt{2yz}$

76. $16x^6y^2z^9\sqrt{3x}$

77. $10x^{10}y^6z\sqrt{7xz}$

78. $5x^4y^3z^2\sqrt{5x}$

79. $-12x^3y^6z^5\sqrt{z}$

80. $-12x^3y^6z^3\sqrt{11x}$

81. 2

82. 3

83. 5

84. $-2\sqrt{2}$

85. $5\sqrt{3}$

86. $3x^2$

87. $\frac{3}{x^2}$

88. $\frac{1}{2x}$

89. $\frac{y}{4x}$

90. $\frac{y^2\sqrt{y}}{x^3}$

91. $2x^3z^3\sqrt{3x}$

92. xy^5

93. $\frac{x\sqrt{x}}{y}$

94. $-\frac{2z^3\sqrt{3z}}{xy^2}$

95. $\frac{4\sqrt{2z}}{y^2}$

96. $xy^2\sqrt{2x}$