Adding, Subtracting, Multiplying Radicals

Simplify.

1) \(-5\sqrt{3} - 3\sqrt{3}\)

2) \(2\sqrt{8} - \sqrt{8}\)

3) \(-4\sqrt{6} - \sqrt{6}\)

4) \(-3\sqrt{5} + 2\sqrt{5}\)

5) \(-3\sqrt{27} - 3\sqrt{27} - 3\sqrt{27}\)

6) \(-3\sqrt{12} + 3\sqrt{3} + 3\sqrt{20}\)

7) \(-2\sqrt{45} - 3\sqrt{20} - 2\sqrt{6}\)

8) \(-3\sqrt{3} - 2\sqrt{192} - \sqrt{320}\)

9) \(-3\sqrt{3} - 2\sqrt{162} + 3\sqrt{81}\)

10) \(4\sqrt{3} + 2\sqrt{32} - 3\sqrt{192} - 2\sqrt{192}\)

11) \(-\sqrt{320} - 4\sqrt{5} + 2\sqrt{135} + 2\sqrt{16}\)

12) \(2\sqrt{6} - \sqrt{6} + 3\sqrt{6} - 3\sqrt{384}\)
13) $\sqrt[3]{} \cdot \sqrt[3]{-20}$

14) $\sqrt{5} \cdot \sqrt{3}$

15) $\sqrt{6} \cdot \sqrt{2}$

16) $\frac{3}{3} \cdot \frac{3}{9}$

17) $3\sqrt{3}(4 - 3\sqrt{5})$

18) $4\sqrt{15}(-3\sqrt{6} + 5)$

19) $4\sqrt{15}(\sqrt{6} + \sqrt{5})$

20) $-\sqrt{2}(\sqrt{10} - 4\sqrt{6})$

21) $\sqrt{15}(2\sqrt{10} - 4\sqrt{6})$

22) $(-7 + \sqrt{3x})(4 + \sqrt{3x})$

23) $(\sqrt{2a} - 5)(7\sqrt{2a} - 5)$

24) $(2 + \sqrt{5})(-2 + \sqrt{5k})$

25) $(\sqrt{3} + \sqrt{5x})(\sqrt{3} - 5\sqrt{5x})$

26) $(7 + \sqrt{6})(1 + \sqrt{6})$
Adding, Subtracting, Multiplying Radicals

Simplify.

1) \(-5\sqrt{3} - 3\sqrt{3}\)
   \(-8\sqrt{3}\)

2) \(2\sqrt{8} - \sqrt{8}\)
   \(2\sqrt{2}\)

3) \(-4\sqrt{6} - \sqrt{6}\)
   \(-5\sqrt{6}\)

4) \(-3\sqrt{5} + 2\sqrt{5}\)
   \(-\sqrt{5}\)

5) \(-3\sqrt{27} - 3\sqrt{27} - 3\sqrt{27}\)
   \(-27\sqrt{3}\)

6) \(-3\sqrt{12} + 3\sqrt{3} + 3\sqrt{20}\)
   \(-3\sqrt{3} + 6\sqrt{5}\)

7) \(-2\sqrt{45} - 3\sqrt{20} - 2\sqrt{6}\)
   \(-12\sqrt{5} - 2\sqrt{6}\)

8) \(-3\sqrt{3} - 2\sqrt{192} - 6\sqrt{320}\)
   \(-7\sqrt{3} - 2\sqrt{5}\)

9) \(-3\sqrt{3} + 2\sqrt{162} + 3\sqrt{81}\)
   \(12\sqrt{3} + 6\sqrt{6}\)

10) \(4\sqrt{3} + 2\sqrt{32} - 3\sqrt{192} - 2\sqrt{192}\)
    \(-6\sqrt{3} + 4\sqrt{2}\)

11) \(-\sqrt{320} - 4\sqrt{5} + 2\sqrt{135} + 2\sqrt{16}\)
    \(-2\sqrt{5} + 4\sqrt{2}\)

12) \(2\sqrt{6} - \sqrt{6} + 3\sqrt{6} - 3\sqrt{384}\)
    \(5\sqrt{6} - 7\sqrt{6}\)
13) $\frac{3}{\sqrt{3}} \cdot \frac{3}{\sqrt{20}} = \sqrt{60}$

14) $\sqrt{5} \cdot \sqrt{3} = \sqrt{15}$

15) $\sqrt{6} \cdot \sqrt{2} = 2\sqrt{3}$

16) $\frac{3}{\sqrt{3}} \cdot \frac{3}{\sqrt{9}} = 3$

17) $3\sqrt{3}(4 - 3\sqrt{5}) = 12\sqrt{3} - 9\sqrt{15}$

18) $4\sqrt{15}(-3\sqrt{6} + 5) = -36\sqrt{10} + 20\sqrt{15}$

19) $4\sqrt{15}(-\sqrt{6} + \sqrt{5}) = 12\sqrt{10} + 20\sqrt{3}$

20) $-\sqrt{2}(\sqrt{10} - 4\sqrt{6}) = -2\sqrt{5} + 8\sqrt{3}$

21) $\sqrt{15}(2\sqrt{10} - 4\sqrt{6}) = 10\sqrt{6} - 12\sqrt{10}$

22) $(-7 + \sqrt{3}x)(4 + \sqrt{3}x) = -28 - 3\sqrt{3}x + 3x$

23) $(\sqrt{2a} - 5)(7\sqrt{2a} - 5) = 14a - 40\sqrt{2a} + 25$

24) $(2 + \sqrt{5})(-2 + \sqrt{5}k) = -4 + 2\sqrt{5}k - 2\sqrt{5} + 5\sqrt{k}$

25) $(\sqrt{3} + \sqrt{5}x)(\sqrt{3} - 5\sqrt{5}x) = 3 - 4\sqrt{15}x - 25x$

26) $(7 + \sqrt{6})(1 + \sqrt{6}) = 13 + 8\sqrt{6}$

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