

# Adding/Subtracting with Radical Expressions

Simplify.

1.  $\frac{\sqrt{32}}{4\sqrt{2}}$     2.  $\frac{\sqrt{27}}{3\sqrt{3}}$     3.  $\frac{\sqrt{20}}{2\sqrt{5}}$     4.  $\frac{\sqrt{75}}{5\sqrt{3}}$   
 5.  $\frac{\sqrt{72}}{6\sqrt{2}}$     6.  $\frac{\sqrt{12}}{2\sqrt{3}}$     7.  $\frac{\sqrt{75}}{5\sqrt{3}}$     8.  $\frac{\sqrt{48}}{4\sqrt{3}}$   
 9.  $3\sqrt{48}$     10.  $4\sqrt{75}$     11.  $5\sqrt{12}$     12.  $9\sqrt{27}$   
 $12\sqrt{3}$      $20\sqrt{3}$      $10\sqrt{3}$      $27\sqrt{3}$

Simplify each square root and then simplify the expression.

13.  $\sqrt{8} + \sqrt{2}$   
 $2\sqrt{2} + \sqrt{2} = 3\sqrt{2}$

14.  $\sqrt{18} + \sqrt{2}$   
 $3\sqrt{2} + \sqrt{2} = 4\sqrt{2}$

15.  $5\sqrt{3} - \sqrt{12}$   
 $5\sqrt{3} - 2\sqrt{3} = 3\sqrt{3}$

16.  $4\sqrt{3} - \sqrt{27}$   
 $4\sqrt{3} - 3\sqrt{3} = \sqrt{3}$

17.  $8\sqrt{5} + \sqrt{125}$   
 $8\sqrt{5} + 5\sqrt{5} = 13\sqrt{5}$

18.  $\sqrt{32} + \sqrt{2}$   
 $4\sqrt{2} + \sqrt{2} = 5\sqrt{2}$

19.  $\sqrt{75} + \sqrt{3}$   
 $5\sqrt{3} + \sqrt{3} = 6\sqrt{3}$

20.  $\sqrt{80} - \sqrt{45}$   
 $4\sqrt{5} - 3\sqrt{5} = \sqrt{5}$

$$\begin{aligned} 21. \quad & \frac{\sqrt{72} - \sqrt{18}}{6\sqrt{2} - 3\sqrt{2}} \\ & \frac{3\sqrt{2}}{3\sqrt{2}} \end{aligned}$$

$$\begin{aligned} 23. \quad & \sqrt{18} + \sqrt{32} \\ & 3\sqrt{2} + 4\sqrt{2} \\ & 7\sqrt{2} \end{aligned}$$

$$\begin{aligned} 25. \quad & \sqrt{20} + \sqrt{80} \\ & 2\sqrt{5} + 4\sqrt{5} \\ & 6\sqrt{5} \end{aligned}$$

$$\begin{aligned} 27. \quad & \sqrt{28} - \sqrt{63} \\ & 2\sqrt{7} - 3\sqrt{7} \\ & -\sqrt{7} \end{aligned}$$

$$\begin{aligned} 29. \quad & \sqrt{32} + 2\sqrt{2} \\ & 4\sqrt{2} + 2\sqrt{2} \\ & 6\sqrt{2} \end{aligned}$$

$$\begin{aligned} 31. \quad & \sqrt{40} + \sqrt{90} - \sqrt{1000} \\ & 2\sqrt{10} + 3\sqrt{10} - 10\sqrt{10} \\ & -5\sqrt{10} \end{aligned}$$

$$\begin{aligned} 33. \quad & 4\sqrt{5} + \sqrt{125} + \sqrt{45} \\ & 4\sqrt{5} + 5\sqrt{5} + 3\sqrt{5} \\ & 12\sqrt{5} \end{aligned}$$

$$\begin{aligned} 22. \quad & 3\sqrt{6} + \sqrt{24} \\ & 2\sqrt{6} \\ & 5\sqrt{6} \end{aligned}$$

$$\begin{aligned} 24. \quad & \sqrt{28} - 3\sqrt{7} + \sqrt{63} \\ & 2\sqrt{7} - 3\sqrt{7} + 3\sqrt{7} \\ & 2\sqrt{7} \end{aligned}$$

$$\begin{aligned} 26. \quad & \sqrt{12} - 2\sqrt{3} \\ & 2\sqrt{3} \\ & 0 \end{aligned}$$

$$\begin{aligned} 28. \quad & \sqrt{24} + \sqrt{54} + 8\sqrt{6} \\ & 2\sqrt{6} + 3\sqrt{6} + 8\sqrt{6} \\ & 13\sqrt{6} \end{aligned}$$

$$\begin{aligned} 30. \quad & \sqrt{200} - \sqrt{242} - \sqrt{2} \\ & 10\sqrt{2} - 11\sqrt{2} - \sqrt{2} \\ & -2\sqrt{2} \end{aligned}$$

$$\begin{aligned} 32. \quad & 2\sqrt{8} - \sqrt{98} + \sqrt{72} \\ & 4\sqrt{2} - 7\sqrt{2} + 6\sqrt{2} \\ & -3\sqrt{2} + 6\sqrt{2} \\ & 3\sqrt{2} \end{aligned}$$

$$\begin{aligned} 34. \quad & \sqrt{24} - \sqrt{96} + \sqrt{6} \\ & 2\sqrt{6} - 4\sqrt{6} + \sqrt{6} \\ & -\sqrt{6} \end{aligned}$$