

099 § 6.3 #51, 3, 5, 11, 27, 29, 31

$$\textcircled{1} 3\sqrt{5} + 4\sqrt{5} = \boxed{7\sqrt{5}}$$

$$\textcircled{3} 3x\sqrt{7} - 4x\sqrt{7} = \boxed{-1x\sqrt{7}} \quad x\sqrt{7}(3-4) = -x\sqrt{7}$$

$$\textcircled{5} 5\sqrt[3]{10} - 4\sqrt[3]{10} = \boxed{\sqrt[3]{10}}$$

$$\begin{array}{r} 2 \overline{)20} \\ 2 \overline{)10} \\ \hline 5 \end{array}$$

$$\begin{array}{r} 2 \overline{)20} \\ 2 \overline{)40} \\ \hline 2 \overline{)20} \\ 2 \overline{)10} \\ \hline 5 \end{array} \quad \begin{array}{r} 3 \overline{)45} \\ 3 \overline{)15} \\ \hline 5 \end{array}$$

$$\textcircled{11} \sqrt{20} - \sqrt{80} + \sqrt{45} \\ = 2\sqrt{5} - 4\sqrt{5} + 3\sqrt{5} = \boxed{\sqrt{5}}$$

$$\textcircled{27} \frac{\sqrt{2}}{2} + \frac{1}{\sqrt{2}} = \frac{\sqrt{2}}{2} + \frac{1}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} = \frac{\sqrt{2}}{2} + \frac{\sqrt{2}}{2} = \frac{2\sqrt{2}}{2} = \boxed{\sqrt{2}}$$

$$\textcircled{29} \frac{\sqrt{5}}{3} + \frac{1}{\sqrt{5}} = \frac{\sqrt{5}}{3} + \frac{1}{\sqrt{5}} \cdot \frac{\sqrt{5}}{\sqrt{5}} = \frac{\sqrt{5}}{3} + \frac{\sqrt{5}}{5}$$

$$= \frac{\sqrt{5}}{3} \cdot \frac{5}{5} + \frac{\sqrt{5}}{5} \cdot \frac{3}{3} = \frac{5\sqrt{5} + 3\sqrt{5}}{15} = \boxed{\frac{8\sqrt{5}}{15}}$$

$$\textcircled{31} \sqrt{x} - \frac{1}{\sqrt{x}} = \sqrt{x} - \frac{1}{\sqrt{x}} \cdot \frac{\sqrt{x}}{\sqrt{x}} = \sqrt{x} - \frac{\sqrt{x}}{x}$$

$$= \frac{\sqrt{x}}{1} \cdot \frac{x}{x} - \frac{\sqrt{x}}{x} = \boxed{\frac{x\sqrt{x} - \sqrt{x}}{x}}$$