

8.4

$$\begin{aligned}
 1) \quad & 3\sqrt{5} \cdot -4\sqrt{16} \\
 & -12\sqrt{80} \\
 & -12\sqrt{2^4 \cdot 5} \\
 & -12 \cdot 2^2 \sqrt{5} \\
 & -12 \cdot 4\sqrt{5} \\
 & -48\sqrt{5}
 \end{aligned}$$

$$\begin{aligned}
 3) \quad & \sqrt{12m}\sqrt{15m} \\
 & \sqrt{180m^2} \\
 & \sqrt{2^2 \cdot 3^2 \cdot 5m^2} \\
 & 2 \cdot 3m\sqrt{5} \\
 & 6m\sqrt{5}
 \end{aligned}$$

$$\begin{aligned}
 5) \quad & \sqrt[3]{4x^3} \sqrt[3]{2x^4} \\
 & \sqrt[3]{8x^7} \\
 & \sqrt[3]{2^3 x^7} \\
 & 2x^2 \sqrt[3]{x}
 \end{aligned}$$

$$\begin{aligned}
 7) \quad & \sqrt{6}(\sqrt{2} + 2) \\
 & \sqrt{12} + 2\sqrt{6} \\
 & \sqrt{2^2 \cdot 3} + 2\sqrt{6} \\
 & 2\sqrt{3} + 2\sqrt{6}
 \end{aligned}$$

$$\begin{aligned}
 9) \quad & -5\sqrt{15}(3\sqrt{3} + 2) \\
 & -15\sqrt{45} - 10\sqrt{15} \\
 & -15\sqrt{3^2 \cdot 5} - 10\sqrt{15} \\
 & -15 \cdot 3\sqrt{5} - 10\sqrt{15} \\
 & -45\sqrt{5} - 10\sqrt{15}
 \end{aligned}$$

$$\begin{aligned}
 11) \quad & 5\sqrt{10}(5n + \sqrt{2}) \\
 & 25n\sqrt{10} + 5\sqrt{20} \\
 & 25n\sqrt{10} + 5\sqrt{2^2 \cdot 5} \\
 & 25n\sqrt{10} + 5 \cdot 2\sqrt{5} \\
 & 25n\sqrt{10} + 10\sqrt{5}
 \end{aligned}$$

$$\begin{aligned}
 13) \quad & (2 + 2\sqrt{2})(-3 + \sqrt{2}) \\
 & -6 + 2\sqrt{2} - 6\sqrt{2} + 2\sqrt{4} \\
 & -6 + 2\sqrt{2} - 6\sqrt{2} + 2\sqrt{2^2} \\
 & -6 + 2\sqrt{2} - 6\sqrt{2} + 2 \cdot 2 \\
 & -6 + 2\sqrt{2} - 6\sqrt{2} + 4 \\
 & -2 - 4\sqrt{2}
 \end{aligned}$$

$$\begin{aligned}
 15) \quad & (\sqrt{5} - 5)(2\sqrt{5} - 1) \\
 & 2\sqrt{25} - \sqrt{5} - 10\sqrt{5} + 5 \\
 & 2\sqrt{5^2} - \sqrt{5} - 10\sqrt{5} + 5 \\
 & 2 \cdot 5 - \sqrt{5} - 10\sqrt{5} + 5 \\
 & 10 - \sqrt{5} - 10\sqrt{5} + 5 \\
 & 15 - 11\sqrt{5}
 \end{aligned}$$

$$\begin{aligned}
 17) \quad & (\sqrt{2a} + 2\sqrt{3a})(3\sqrt{2a} + \sqrt{5a}) \\
 & 3\sqrt{4a^2} + \sqrt{10a^2} + 6\sqrt{6a^2} + 2\sqrt{15a^2} \\
 & 3\sqrt{2^2 a^2} + \sqrt{10a^2} + 6\sqrt{6a^2} + 2\sqrt{15a^2} \\
 & 3 \cdot 2a + a\sqrt{10} + 6a\sqrt{6} + 2a\sqrt{15} \\
 & 6a + a\sqrt{10} + 6a\sqrt{6} + 2a\sqrt{15}
 \end{aligned}$$

$$\begin{aligned}
 19) \quad & (-5 - 4\sqrt{3})(-3 - 4\sqrt{3}) \\
 & 15 + 20\sqrt{3} + 12\sqrt{3} + 16\sqrt{9} \\
 & 15 + 20\sqrt{3} + 12\sqrt{3} + 16\sqrt{3^2} \\
 & 15 + 20\sqrt{3} + 12\sqrt{3} + 16 \cdot 3 \\
 & 15 + 20\sqrt{3} + 12\sqrt{3} + 48 \\
 & 63 + 32\sqrt{3}
 \end{aligned}$$

$$21) \frac{\sqrt{12}}{5\sqrt{100}} = \frac{\sqrt{3}}{5\sqrt{25}} = \frac{\sqrt{3}}{5\sqrt{5^2}} = \frac{\sqrt{3}}{5 \cdot 5} = \frac{\sqrt{3}}{25}$$

$$23) \frac{\sqrt{5}}{4\sqrt{125}} = \frac{1}{4\sqrt{25}} = \frac{1}{4\sqrt{5^2}} = \frac{1}{4 \cdot 5} = \frac{1}{20}$$

$$25) \frac{\sqrt{10}}{\sqrt{6}} = \frac{\sqrt{5}}{\sqrt{3}} \left(\frac{\sqrt{3}}{\sqrt{3}} \right) = \frac{\sqrt{15}}{3}$$

$$27) \frac{2\sqrt{4}}{3\sqrt{3}} \left(\frac{\sqrt{3}}{\sqrt{3}} \right) = \frac{2\sqrt{12}}{3 \cdot 3} = \frac{2\sqrt{2^2 \cdot 3}}{9} = \frac{2 \cdot 2\sqrt{3}}{9} = \frac{4\sqrt{3}}{9}$$

$$29) \frac{5x^2}{4\sqrt{3x^3y^3}} = \frac{5x^2}{4xy\sqrt{3xy}} = \frac{5x}{4y\sqrt{3xy}} \left(\frac{\sqrt{3xy}}{\sqrt{3xy}} \right) = \frac{5x\sqrt{3xy}}{4y \cdot 3xy} = \frac{5x\sqrt{3xy}}{12xy^2}$$

$$31) \frac{\sqrt{2p^2}}{\sqrt{3p}} = \frac{\sqrt{2p}}{\sqrt{3}} \left(\frac{\sqrt{3}}{\sqrt{3}} \right) = \frac{\sqrt{6p}}{3}$$

$$33) \frac{3\sqrt[3]{10}}{5\sqrt[3]{27}} = \frac{3\sqrt[3]{10}}{5\sqrt[3]{3^2}} = \frac{3\sqrt[3]{10}}{5 \cdot 3} = \frac{3\sqrt[3]{10}}{15} = \frac{\sqrt[3]{10}}{5}$$

$$35) \frac{\sqrt[3]{5}}{4\sqrt[3]{4}} = \frac{\sqrt[3]{5}}{4\sqrt[3]{2^2}} \left(\frac{\sqrt[3]{2}}{\sqrt[3]{2}} \right) = \frac{3\sqrt[3]{10}}{4 \cdot 2} = \frac{3\sqrt[3]{10}}{8}$$

$$37) \frac{5\sqrt[4]{5r^4}}{\sqrt[4]{8r^2}} = \frac{5\sqrt[4]{5r^2}}{\sqrt[4]{8}} = \frac{5\sqrt[4]{5r^2}}{\sqrt[4]{2^3}} \left(\frac{\sqrt[4]{2}}{\sqrt[4]{2}} \right) = \frac{5\sqrt[4]{10r}}{2}$$