

ex. 3 exemplar problems E-CH1-P11

$$\begin{aligned} \textcircled{9} \textcircled{i} \quad & \sqrt{45} - 3\sqrt{20} + 4\sqrt{5} \\ & = \sqrt{3 \times 3 \times 5} - 3\sqrt{2 \times 2 \times 5} + 4\sqrt{5} \\ & = 3\sqrt{5} - 6\sqrt{5} + 4\sqrt{5} \\ & = 7\sqrt{5} - 6\sqrt{5} \\ & = \sqrt{5} \end{aligned}$$

$$\begin{aligned} \textcircled{ii} \quad & \frac{\sqrt{24}}{8} + \frac{\sqrt{54}}{9} \\ & = \frac{\sqrt{2 \times 2 \times 2 \times 3}}{8} + \frac{\sqrt{3 \times 3 \times 3 \times 2}}{9} \\ & = \frac{2\sqrt{6}}{8} + \frac{3\sqrt{6}}{9} \\ & = \frac{3\sqrt{6} + 4\sqrt{6}}{12} \\ & = \frac{7\sqrt{6}}{12} \end{aligned}$$

$$\begin{aligned} \textcircled{iii} \quad & \sqrt[4]{12} \times \sqrt[6]{7} \\ & = \sqrt[12]{12^3 \times 7^2} \\ & = \sqrt[12]{84672} \end{aligned}$$

$$\begin{aligned} \textcircled{iv} \quad & \sqrt[4]{28} \div \sqrt[3]{7} \\ & = \sqrt[12]{\frac{28^4 \times 28^4}{7 \times 7 \times 7 \times 7}} \\ & = \sqrt[12]{\frac{64}{7}} \end{aligned}$$

$$\begin{aligned} \textcircled{v} \quad & 3\sqrt{3} + 2\sqrt{27} + \frac{7}{\sqrt{3}} \\ & = 3\sqrt{3} + 2\sqrt{3 \times 3 \times 3} + \frac{1}{\sqrt{3}} \times \frac{\sqrt{3}}{\sqrt{3}} \\ & = 3\sqrt{3} + 6\sqrt{3} + \frac{\sqrt{3}}{3} \\ & = \frac{9\sqrt{3} + 18\sqrt{3} + \sqrt{3}}{3} \\ & = \frac{34\sqrt{3}}{3} \end{aligned}$$

$$\begin{aligned} \textcircled{vi} \quad & (\sqrt{3} - \sqrt{2})^2 \\ & = (\sqrt{3})^2 + (\sqrt{2})^2 - 2\sqrt{3} \times \sqrt{2} \\ & = 3 + 2 - 2\sqrt{6} \\ & = 5 - 2\sqrt{6} \end{aligned}$$

$$\begin{aligned} \textcircled{vii} \quad & \sqrt[4]{81} - 8\sqrt[3]{216} + 15\sqrt[5]{32} + \sqrt{225} \\ & = \sqrt[4]{3^4} - 8\sqrt[3]{6^3} + 15\sqrt[5]{2^5} + \sqrt{15^2} \\ & = 3 - 8 \times 6 + 15 \times 2 + 15 \\ & = 18 - 48 + 30 \\ & = 48 - 48 \\ & = 0 \end{aligned}$$