

(1) Vereenvoudig, sonder 'n sakrekenaar: (Skryf antwoorde as positiewe eksponente!)

$$\begin{aligned}
 \text{(a)} \quad \sqrt{8} + \sqrt{50} - \sqrt{18} &= \sqrt{4 \times 2} + \sqrt{25 \times 2} - \sqrt{9 \times 2} \\
 &= 2\sqrt{2} + 5\sqrt{2} - 3\sqrt{2} \\
 &= 4\sqrt{2}
 \end{aligned}$$

$$\begin{aligned}
 \text{(b)} \quad \sqrt[3]{16} + 2\sqrt[3]{250} - \sqrt[3]{54} &= \sqrt[3]{2 \times 8} + 2 \times \sqrt[3]{2 \times 125} - \sqrt[3]{2 \times 27} \\
 &= 2\sqrt[3]{2} + 2 \times 5 \times \sqrt[3]{2} - 3\sqrt[3]{2} \\
 &= \sqrt[3]{2}(2 + 10 - 3) \\
 &= \sqrt[3]{2}(9) \\
 &= 9\sqrt[3]{2}
 \end{aligned}$$

$$\begin{aligned}
 \text{(c)} \quad (4\sqrt{2} - 3)^2 &= (4\sqrt{2} - 3)(4\sqrt{2} - 3) \\
 &= (4\sqrt{2})^2 - 2 \times 4\sqrt{2} \times 3 + 9 \\
 &= 16 \times 2 - 8\sqrt{2} \times 3 + 9 \\
 &= 32 - 24\sqrt{2} + 9 \\
 &= 41 - 24\sqrt{2}
 \end{aligned}$$

$$\begin{aligned}
 \text{(d)} \quad \sqrt{3}(\sqrt{48} - 3\sqrt{75} + 2\sqrt{108}) &= \sqrt{3}(\sqrt{16 \times 3} - 3\sqrt{3 \times 25} + 2\sqrt{3 \times 36}) \\
 &= \sqrt{3}(4\sqrt{3} - 3 \times 5\sqrt{3} + 2 \times 6\sqrt{3}) \\
 &= \sqrt{3}(4\sqrt{3} - 15\sqrt{3} + 12\sqrt{3}) \\
 &= \sqrt{3}(1\sqrt{3}) \\
 &= 3
 \end{aligned}$$

$$\begin{aligned}
 \text{(e)} \quad \frac{\sqrt{\sqrt{64}} - \sqrt{12}}{\sqrt{18} - \sqrt{27}} &= \frac{\sqrt{8} - \sqrt{4 \times 3}}{\sqrt{9 \times 2} - \sqrt{9 \times 3}} \\
 &= \frac{\sqrt{4 \times 2} - 2\sqrt{3}}{3\sqrt{2} - 3\sqrt{3}} \\
 &= \frac{2\sqrt{2} - 2\sqrt{3}}{3\sqrt{2} - 3\sqrt{3}} \\
 &= \frac{2(\cancel{\sqrt{2}} - \sqrt{3})}{3(\cancel{\sqrt{2}} - \sqrt{3})} \\
 &= \frac{2}{3}
 \end{aligned}$$

$$\begin{aligned}
 \text{(f)} \quad (\sqrt[4]{7})^4 - \sqrt{98} &= 7 - \sqrt{49 \times 2} \\
 &= 7 - 7\sqrt{2} \\
 &= 7(1 - \sqrt{2})
 \end{aligned}$$

$$\begin{aligned}
 \text{(g)} \quad \frac{\sqrt[3]{27x^6} + \sqrt[4]{16x^8}}{\sqrt[3]{125x^{27}}} &= \frac{\sqrt[3]{27} \sqrt[3]{x^6} + \sqrt[4]{16} \sqrt[4]{x^8}}{\sqrt[3]{125} \sqrt[3]{x^{27}}} \\
 &= \frac{3x^2 + 2x^2}{5x^9} \\
 &= \frac{5x^2}{5x^9} \\
 &= \frac{x^2}{x^9} = \frac{1}{x^9 - 2} \\
 &= \frac{1}{x^7}
 \end{aligned}$$

$$\begin{aligned}
 \text{(h)} \quad (4 - \sqrt{3})^2 - (\sqrt{3} + 2)^2 &= (16 - 8\sqrt{3} + 3) - (3 + 4\sqrt{3} + 4) \\
 &= 19 - 8\sqrt{3} - 7 - 4\sqrt{3} \\
 &= 12 - 12\sqrt{3} \\
 &= 12(1 - \sqrt{3})
 \end{aligned}$$

(i)

$$\begin{aligned}\frac{\sqrt{48}}{\sqrt{75}} + \frac{\sqrt{50}}{\sqrt{128}} &= \frac{\sqrt{16 \times 3}}{\sqrt{25 \times 3}} + \frac{\sqrt{25 \times 2}}{\sqrt{64 \times 2}} \\ &= \frac{4\sqrt{3}}{5\sqrt{3}} + \frac{5\sqrt{2}}{8\sqrt{2}} \\ &= \frac{4}{5} + \frac{5}{8} \\ &= \frac{4}{5} \times \frac{8}{8} + \frac{5}{8} \times \frac{5}{5} \\ &= \frac{32}{40} + \frac{25}{40} \\ &= \frac{57}{40} \\ &= 1\frac{17}{40}\end{aligned}$$

(2) Vereenvoudig, sonder 'n sakrekenaar: (Skryf antwoorde as positiewe eksponente!)
Waar nodig, rasionaliseer die noemer.

(a)

$$\begin{aligned}\frac{5\sqrt{2}}{\sqrt{5}} &= \frac{5\sqrt{2}}{\sqrt{5}} \times \frac{\sqrt{5}}{\sqrt{5}} \\ &= \frac{5\sqrt{2} \times \sqrt{5}}{5} \\ &= \frac{5\sqrt{10}}{5} \\ &= \sqrt{10}\end{aligned}$$

(b)

$$\begin{aligned}\frac{\sqrt{3} + \sqrt{5}}{\sqrt{3}} &= \frac{\sqrt{3} + \sqrt{5}}{\sqrt{3}} \times \frac{\sqrt{3}}{\sqrt{3}} \\ &= \frac{\sqrt{3}(\sqrt{3} + \sqrt{5})}{3} \\ &= \frac{3 + \sqrt{15}}{3}\end{aligned}$$

(c)

$$\begin{aligned}(2 + \sqrt{p})^{-1} &= \frac{1}{(2 + \sqrt{p})} \\ &= \frac{1}{(2 + \sqrt{p})} \times \frac{(2 - \sqrt{p})}{(2 - \sqrt{p})} \\ &= \frac{(2 - \sqrt{p})}{4 - p}\end{aligned}$$

(d)

$$\begin{aligned}\frac{\sqrt{6}}{\sqrt{6} + 1} &= \frac{\sqrt{6}}{\sqrt{6} + 1} \times \frac{\sqrt{6} - 1}{\sqrt{6} - 1} \\&= \frac{\sqrt{6}}{\sqrt{6} + 1} \times \frac{\sqrt{6} - 1}{\sqrt{6} - 1} \\&= \frac{\sqrt{6}(\sqrt{6} - 1)}{6 - 1} \\&= \frac{6 - \sqrt{6}}{5}\end{aligned}$$