

1.4

$$\begin{aligned} 1) \quad (4 - \sqrt{3}) \cdot \sqrt{3} &= 4 \cdot \sqrt{3} - \sqrt{3} \cdot \sqrt{3} \\ &= 4\sqrt{3} - 3 \end{aligned}$$

$$\begin{aligned} 2) \quad (\sqrt{5} - \sqrt{3}) \cdot \sqrt{15} &= \sqrt{5} \cdot \sqrt{15} - \sqrt{3} \cdot \sqrt{15} \\ &= \sqrt{5 \cdot 15} - \sqrt{3 \cdot 15} \\ &= \sqrt{5 \cdot 5 \cdot 3} - \sqrt{3 \cdot 3 \cdot 5} \\ &= 5\sqrt{3} - 3\sqrt{5} \end{aligned}$$

$$\begin{aligned} 3) \quad (3 + \sqrt{5})(2 - \sqrt{5}) &= 3 \cdot 2 - 3 \cdot \sqrt{5} + 2 \cdot \sqrt{5} - \sqrt{5} \cdot \sqrt{5} \\ &= 6 - 3\sqrt{5} + 2\sqrt{5} - 5 \\ &= 1 - \sqrt{5} \end{aligned}$$

$$\begin{aligned} 4) \quad (7 + 2\sqrt{6})(9 - 5\sqrt{6}) &= 7 \cdot 9 - 7 \cdot 5\sqrt{6} + 2 \cdot 9\sqrt{6} + 2 \cdot 5\sqrt{6}\sqrt{6} \\ &= 63 - 35\sqrt{6} + 18\sqrt{6} + 10 \cdot 6 \\ &= 3 - 17\sqrt{6} \end{aligned}$$

$$\begin{aligned} 5) \quad (9\sqrt{12} + 3)(\sqrt{3} + 8) &= (9 \cdot 2\sqrt{3} + 3)(\sqrt{3} + 8) = (18\sqrt{3} + 3)(\sqrt{3} + 8) \\ &= 18\sqrt{3}\sqrt{3} + 18 \cdot 8\sqrt{3} + 3\sqrt{3} + 3 \cdot 8 \\ &= 18 \cdot 3 + 144\sqrt{3} + 3\sqrt{3} + 24 \\ &= 78 + 147\sqrt{3} \end{aligned}$$

$$\begin{aligned} 6) \quad (4\sqrt{3} + \sqrt{45})(\sqrt{5} - 2\sqrt{27}) &= (4\sqrt{3} + 3\sqrt{5})(\sqrt{5} - 6\sqrt{3}) \\ &= 4\sqrt{3}\sqrt{5} - 4 \cdot 6\sqrt{3}\sqrt{3} + 3\sqrt{5}\sqrt{5} - 3 \cdot 6\sqrt{5}\sqrt{3} \\ &= 4\sqrt{15} - 72 + 15 - 18\sqrt{15} \\ &= -57 - 14\sqrt{15} \end{aligned}$$

$$\begin{aligned} 7) \quad (\sqrt{50} - 5\sqrt{7})(2\sqrt{28} - \sqrt{18}) &= (5\sqrt{2} - 5\sqrt{7})(4\sqrt{7} - 3\sqrt{2}) \\ &= 5 \cdot 4\sqrt{2}\sqrt{7} - 5 \cdot 3\sqrt{2}\sqrt{2} - 5 \cdot 4\sqrt{7}\sqrt{7} + 5 \cdot 3\sqrt{7}\sqrt{2} \\ &= 20\sqrt{14} - 30 - 140 + 15\sqrt{14} \\ &= -170 + 35\sqrt{14} \end{aligned}$$

$$\begin{aligned} 8) \quad (6 + 12\sqrt{7})(3 - 5\sqrt{7}) &= 6 \cdot 3 - 6 \cdot 5\sqrt{7} + 12 \cdot 3\sqrt{7} - 12 \cdot 5\sqrt{7}\sqrt{7} \\ &= 18 - 30\sqrt{7} + 36\sqrt{7} - 420 \\ &= -402 + 6\sqrt{7} \end{aligned}$$

$$\begin{aligned}
9) \quad & (3\sqrt{3} + 2\sqrt{28} - \sqrt{12} + 16\sqrt{2})(\sqrt{3} - 2\sqrt{2}) = \\
& (3\sqrt{3} + 4\sqrt{7} - 2\sqrt{3} + 16\sqrt{2})(\sqrt{3} - 2\sqrt{2}) = \\
& 3\sqrt{3}\sqrt{3} - 3 \cdot 2\sqrt{3}\sqrt{2} + 4\sqrt{7}\sqrt{3} - 4 \cdot 2\sqrt{7}\sqrt{2} - 2\sqrt{3}\sqrt{3} + 2 \cdot 2\sqrt{3}\sqrt{2} \\
& \quad + 16\sqrt{2}\sqrt{3} - 16 \cdot 2\sqrt{2}\sqrt{2} = \\
& 9 - 6\sqrt{6} + 4\sqrt{21} - 8\sqrt{14} - 6 + 4\sqrt{6} + 16\sqrt{6} - 64 = \\
& -61 + 14\sqrt{6} - 8\sqrt{14} + 4\sqrt{21}
\end{aligned}$$

$$\begin{aligned}
10) \quad & (4 - 3\sqrt{7})(\sqrt{28} - 1)(2 - \sqrt{7})(4 + \sqrt{63}) = \\
& \left((4 - 3\sqrt{7})(2\sqrt{7} - 1)\right) \left((2 - \sqrt{7})(4 + 3\sqrt{7})\right) = \\
& (8\sqrt{7} - 4 - 42 + 3\sqrt{7})(8 + 6\sqrt{7} - 4\sqrt{7} - 21) = \\
& (-46 + 11\sqrt{7})(-13 + 2\sqrt{7}) = \\
& 598 - 92\sqrt{7} - 143\sqrt{7} + 154 = \\
& 752 - 235\sqrt{7}
\end{aligned}$$