

1.

$$\begin{aligned}(\sqrt{4} - \sqrt{4})(\sqrt{6} - \sqrt{9}) &= 0 \times (\sqrt{6} - \sqrt{9}) \\ &= 0\end{aligned}$$

2.

$$\begin{aligned}(\sqrt{9} - \sqrt{6})(\sqrt{8} - \sqrt{6}) &= \sqrt{9} \times \sqrt{8} - \sqrt{9} \times \sqrt{6} - \sqrt{6} \times \sqrt{8} + \sqrt{6} \times \sqrt{6} \\ &= \sqrt{9 \times 8} - \sqrt{9 \times 6} - \sqrt{6 \times 8} + \sqrt{6 \times 6} \\ &= \sqrt{72} - \sqrt{54} - \sqrt{48} + 6 \\ &= 6\sqrt{2} - 3\sqrt{6} - 4\sqrt{3} + 6 \\ &= 6 + 6\sqrt{2} - 4\sqrt{3} - 3\sqrt{6}\end{aligned}$$

3.

$$\begin{aligned}(\sqrt{6} + \sqrt{6})(\sqrt{6} - \sqrt{3}) &= \sqrt{6} \times \sqrt{6} - \sqrt{6} \times \sqrt{3} + \sqrt{6} \times \sqrt{6} - \sqrt{6} \times \sqrt{3} \\ &= \sqrt{6 \times 6} - \sqrt{6 \times 3} + \sqrt{6 \times 6} - \sqrt{6 \times 3} \\ &= 6 - \sqrt{18} + 6 - \sqrt{18} \\ &= 6 - 3\sqrt{2} + 6 - 3\sqrt{2} \\ &= 6 + 6 - 3\sqrt{2} - 3\sqrt{2} \\ &= 12 - 6\sqrt{2}\end{aligned}$$