

1.

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

2.

$$\begin{aligned}\frac{3}{\sqrt{5}} &= \frac{3}{\sqrt{5}} \times \frac{\sqrt{5}}{\sqrt{5}} \\ &= \frac{3\sqrt{5}}{5}\end{aligned}$$

3.

$$\begin{aligned}\frac{2}{\sqrt{7}} &= \frac{2}{\sqrt{7}} \times \frac{\sqrt{7}}{\sqrt{7}} \\ &= \frac{2\sqrt{7}}{7}\end{aligned}$$

4.

$$\begin{aligned}\frac{3}{5\sqrt{2}} &= \frac{3}{5\sqrt{2}} \times \frac{\sqrt{2}}{\sqrt{2}} \\ &= \frac{3\sqrt{2}}{5 \times 2} \\ &= \frac{3\sqrt{2}}{10}\end{aligned}$$

5.

$$\begin{aligned}\frac{4}{3\sqrt{2}} &= \frac{4}{3\sqrt{2}} \times \frac{\sqrt{2}}{\sqrt{2}} \\ &= \frac{4\sqrt{2}}{3 \times 2} \\ &= \frac{4\sqrt{2}}{6} \\ &= \frac{2\sqrt{2}}{3}\end{aligned}$$

6.

$$\begin{aligned}\frac{6}{7\sqrt{3}} &= \frac{6}{7\sqrt{3}} \times \frac{\sqrt{3}}{\sqrt{3}} \\ &= \frac{6\sqrt{3}}{7 \times 3} \\ &= \frac{6\sqrt{3}}{21} \\ &= \frac{2\sqrt{3}}{7}\end{aligned}$$

7.

$$\begin{aligned}\frac{1}{4\sqrt{5}} &= \frac{1}{4\sqrt{5}} \times \frac{\sqrt{5}}{\sqrt{5}} \\ &= \frac{\sqrt{5}}{4 \times 5} \\ &= \frac{\sqrt{5}}{20}\end{aligned}$$

8.

$$\begin{aligned}\frac{3}{5\sqrt{2}} &= \frac{3}{5\sqrt{2}} \times \frac{\sqrt{2}}{\sqrt{2}} \\ &= \frac{3\sqrt{2}}{5 \times 2} \\ &= \frac{3\sqrt{2}}{10}\end{aligned}$$

9.

$$\begin{aligned}\frac{3}{5 + \sqrt{2}} &= \frac{3}{5 + \sqrt{2}} \times \frac{5 - \sqrt{2}}{5 - \sqrt{2}} \\ &= \frac{3(5 - \sqrt{2})}{5^2 - (\sqrt{2})^2} \\ &= \frac{15 - 3\sqrt{2}}{25 - 2} \\ &= \frac{15 - 3\sqrt{2}}{23}\end{aligned}$$

10.

$$\begin{aligned}\frac{1}{7 + \sqrt{3}} &= \frac{1}{7 + \sqrt{3}} \times \frac{7 - \sqrt{3}}{7 - \sqrt{3}} \\ &= \frac{1(7 - \sqrt{3})}{7^2 - (\sqrt{3})^2} \\ &= \frac{7 - \sqrt{3}}{49 - 3} \\ &= \frac{7 - \sqrt{3}}{46}\end{aligned}$$

11.

$$\begin{aligned}\frac{5}{3 - \sqrt{2}} &= \frac{5}{3 - \sqrt{2}} \times \frac{3 + \sqrt{2}}{3 + \sqrt{2}} \\ &= \frac{5(3 + \sqrt{2})}{3^2 - (\sqrt{2})^2} \\ &= \frac{15 + 5\sqrt{2}}{9 - 2} \\ &= \frac{15 + 5\sqrt{2}}{7}\end{aligned}$$

12.

$$\begin{aligned}\frac{2}{5 - \sqrt{3}} &= \frac{2}{5 - \sqrt{3}} \times \frac{5 + \sqrt{3}}{5 + \sqrt{3}} \\&= \frac{2(5 + \sqrt{3})}{5^2 - (\sqrt{3})^2} \\&= \frac{10 + 2\sqrt{3}}{25 - 3} \\&= \frac{10 + 2\sqrt{3}}{22} \\&= \frac{2(5 + \sqrt{3})}{2 \times 11} \\&= \frac{5 + \sqrt{3}}{11}\end{aligned}$$

13.

$$\begin{aligned}\frac{1}{8 + \sqrt{3}} &= \frac{1}{8 + \sqrt{3}} \times \frac{8 - \sqrt{3}}{8 - \sqrt{3}} \\&= \frac{1(8 - \sqrt{3})}{8^2 - (\sqrt{3})^2} \\&= \frac{8 - \sqrt{3}}{64 - 3} \\&= \frac{8 - \sqrt{3}}{61}\end{aligned}$$

14.

$$\begin{aligned}\frac{2}{3 + 2\sqrt{5}} &= \frac{2}{3 + 2\sqrt{5}} \times \frac{3 - 2\sqrt{5}}{3 - 2\sqrt{5}} \\&= \frac{2(3 - 2\sqrt{5})}{3^2 - (2\sqrt{5})^2} \\&= \frac{6 - 4\sqrt{5}}{9 - (4 \times 5)} \\&= \frac{6 - 4\sqrt{5}}{9 - 20} \\&= \frac{6 - 4\sqrt{5}}{-11} \\&= \frac{-(6 - 4\sqrt{5})}{11} \\&= \frac{4\sqrt{5} - 6}{11}\end{aligned}$$

15.

$$\begin{aligned}\frac{6}{5-3\sqrt{2}} &= \frac{6}{5-3\sqrt{2}} \times \frac{5+3\sqrt{2}}{5+3\sqrt{2}} \\&= \frac{6(5+3\sqrt{2})}{5^2 - (3\sqrt{2})^2} \\&= \frac{30+18\sqrt{2}}{25 - (9 \times 2)} \\&= \frac{30+18\sqrt{2}}{25-18} \\&= \frac{30+18\sqrt{2}}{7}\end{aligned}$$

16.

$$\begin{aligned}\frac{7}{1-2\sqrt{3}} &= \frac{7}{1-2\sqrt{3}} \times \frac{1+2\sqrt{3}}{1+2\sqrt{3}} \\&= \frac{7(1+2\sqrt{3})}{1^2 - (2\sqrt{3})^2} \\&= \frac{7+14\sqrt{3}}{1 - (4 \times 3)} \\&= \frac{7+14\sqrt{3}}{1-12} \\&= \frac{7+14\sqrt{3}}{-11} \\&= \frac{-(7+14\sqrt{3})}{11}\end{aligned}$$

17.

$$\begin{aligned}\frac{4}{8+5\sqrt{3}} &= \frac{4}{8+5\sqrt{3}} \times \frac{8-5\sqrt{3}}{8-5\sqrt{3}} \\&= \frac{4(8-5\sqrt{3})}{8^2 - (5\sqrt{3})^2} \\&= \frac{32-20\sqrt{3}}{64 - (25 \times 3)} \\&= \frac{32-20\sqrt{3}}{64-75} \\&= \frac{32-20\sqrt{3}}{-11} \\&= \frac{-(32-20\sqrt{3})}{11} \\&= \frac{20\sqrt{3}-32}{11}\end{aligned}$$

18.

$$\begin{aligned}\frac{1}{6-3\sqrt{7}} &= \frac{1}{6-3\sqrt{7}} \times \frac{6+3\sqrt{7}}{6+3\sqrt{7}} \\&= \frac{1(6+3\sqrt{7})}{6^2 - (3\sqrt{7})^2} \\&= \frac{6+3\sqrt{7}}{36 - (9 \times 7)} \\&= \frac{6+3\sqrt{7}}{36 - 63} \\&= \frac{6+3\sqrt{7}}{-27} \\&= \frac{-(6+3\sqrt{7})}{27} \\&= \frac{-3(2+\sqrt{7})}{27} \\&= \frac{-(2+\sqrt{7})}{9}\end{aligned}$$
