

$$\begin{aligned}
\frac{11 + \sqrt{21}}{11 - \sqrt{21}} + \frac{11 - \sqrt{21}}{11 + \sqrt{21}} &= \frac{(11 + \sqrt{21})(11 + \sqrt{21}) + (11 - \sqrt{21})(11 - \sqrt{21})}{(11 - \sqrt{21})(11 + \sqrt{21})} = \\
&= \frac{(11 + \sqrt{21})^2 + (11 - \sqrt{21})^2}{11^2 - \sqrt{21}^2} = \frac{121 + 22\sqrt{21} + 21 + 121 - 22\sqrt{21} + 21}{121 - 21} = \frac{284}{100} \\
&= 2,84
\end{aligned}$$

$$\frac{5}{3 + 2\sqrt{2}} + \frac{5}{3 - 2\sqrt{2}} = \frac{5(3 - 2\sqrt{2}) + 5(3 + 2\sqrt{2})}{(3 + 2\sqrt{2})(3 - 2\sqrt{2})} = \frac{15 - 10\sqrt{2} + 15 + 10\sqrt{2}}{9 - 8} = 30$$

$$\sqrt[4]{4 + \sqrt{15}} * \sqrt[4]{4 - \sqrt{15}} = \sqrt[4]{(4 + \sqrt{15})(4 - \sqrt{15})} = \sqrt[4]{4^2 - 15} = \sqrt[4]{16 - 15} = 1$$

$$(3\sqrt{5} + \sqrt{15})^2 - 10\sqrt{27} = 45 + 6\sqrt{75} + 15 - 10\sqrt{27} = 45 + 6 * 5\sqrt{3} + 15 - 10 * 3\sqrt{3} = 60$$