7.8. $4 \cdot \sqrt[3]{81} \cdot \sqrt[6]{81} = 4 \cdot \underbrace{81^{\frac{1}{3}} \cdot 81^{\frac{1}{6}}}_{} = 4 \cdot 81^{\frac{1}{3}+\frac{1}{6}} =$

$= 4 \cdot 81^{\frac{2+1}{6}} = 4 \cdot 81^{\frac{1}{2}} = 4 \cdot \sqrt{81} = 4 \cdot 9 = 36$

7.9. $\sqrt{28 - 16\sqrt{3}} + \sqrt{28 + 16\sqrt{3}} = \sqrt{(a-b)^2} + \sqrt{(a+b)^2}$ (=)

$\underbrace{28}_{a^2+b^2} - \underbrace{16\sqrt{3}}_{2ab} = (a-b)^2 = a^2 + 2 \cdot a \cdot b + b^2$

$\begin{cases} a^2+b^2 = 28 \\ 2ab = 16\sqrt{3} \end{cases} \Rightarrow \begin{cases} a^2+b^2 = 28 \\ ab = 8\sqrt{3} \end{cases}$

$\sqrt[2]{a^2} = |a|$

$\sqrt[4]{a^4} = |a|$

$\sqrt[3]{a^3} = a$

$2 \cdot 2 \cdot 2$

$a = 8 \quad b = \sqrt{3}$

$a^2+b^2 = 64+3 \neq 28$

$\boxed{a = 4 \quad b = 2\sqrt{3}}$

$a^2+b^2 = 16+4 \cdot 3 = 28!$

(=) $\sqrt{(4-2\sqrt{3})^2} + \sqrt{(4+2\sqrt{3})^2} = |4-2\sqrt{3}| + |4+2\sqrt{3}|$ (=)

$|a| = \begin{cases} a, & a \geq 0 \\ -a, & a < 0 \end{cases}$

$a \geq 0, a = 5 \quad |5| = 5$

$a = 0 \quad |0| = 0$

$a < 0, a = -3 \quad |-3| = -(-3) = 3$

$\sqrt{3} \approx 1,7, \quad 2\sqrt{3} \approx 3,4 \Rightarrow 4 - 2\sqrt{3} > 0$

(=) $4 - 2\sqrt{3} + 4 + 2\sqrt{3} = 8$

7.11. $\dfrac{(\sqrt{33})^{n+6}}{(\sqrt{3})^{n-4}}$, если $121^{2n+10} = 3\,748\,096$

$\dfrac{(\sqrt{33})^{n+6}}{(\sqrt{3})^{n-4}} = \dfrac{(\sqrt{3} \cdot \sqrt{11})^{n+6}}{(\sqrt{3})^{n-4}} = \dfrac{(\sqrt{3})^{n+6} \cdot (\sqrt{11})^{n+6}}{(\sqrt{3})^{n-4}} =$

$= (\sqrt{3})^{n+6-(n-4)} \cdot (\sqrt{11})^{n+6} = (\sqrt{3})^{10} \cdot (\sqrt{11})^{n+6}$ (=)

$121^{2n+10} = 3748096 \Rightarrow 121^{2(n+5)} = 3\ldots \Rightarrow (121^{n+5})^2 = 3\ldots$ / из левой корень квадр.

$121^{n+5} = 1936 \Rightarrow (11^2)^{n+5} = 1936 \Rightarrow (11^{n+5})^2 = 1936$ / изв. $\sqrt{\ }$

$\boxed{11^{n+5} = 44}$

(=) $(3^{\frac{1}{2}})^{10} \cdot (11^{\frac{1}{2}})^{n+6} = 3^5 \cdot (11^{n+6})^{\frac{1}{2}} =$

$= 243 \cdot (11^{n+5+1})^{\frac{1}{2}} = 243 \cdot (\underbrace{11^{n+5}} \cdot 11)^{\frac{1}{2}} = 243 \cdot \sqrt{44 \cdot 11} =$

$= 243 \cdot \sqrt{4 \cdot 11^2} = 243 \cdot 2 \cdot 11 = 486 \cdot 11 = 5346$