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чтобы было по-проще:

$$\begin{aligned}\sqrt[3]{2z+3} &= m; \\ \sqrt[3]{2z-3} &= n\end{aligned}$$

$$\left(\sqrt[3]{\frac{8z^3+24z^2+18z}{2z-3}} - \sqrt[3]{\frac{8z^3-24z^2+18z}{2z+3}} \right) - \left(\frac{1}{2} \sqrt[3]{\frac{2z}{27} - \frac{1}{6z}} \right)^{-1} =$$

$$= \sqrt[3]{\frac{2z(4z^2+12z+9)}{2z-3}} - \sqrt[3]{\frac{2z(4z^2-12z+9)}{2z+3}} - 2\sqrt[3]{\frac{54z}{4z^2-9}} =$$

$$= \frac{\sqrt[3]{2z(2z+3)^2}}{\sqrt[3]{2z-3}} - \frac{\sqrt[3]{2z(2z-3)^2}}{\sqrt[3]{2z+3}} - \frac{6\sqrt[3]{2z}}{\sqrt[3]{(2z-3)(2z+3)}} =$$

$$= \sqrt[3]{2z} \left(\frac{m^2}{n} - \frac{n^2}{m} - \frac{6}{m \cdot n} \right) = \sqrt[3]{2z} \cdot \frac{m^3 - n^3 - 6}{mn} =$$

$$= \sqrt[3]{2z} \cdot \frac{2z+3-2z+3-6}{mn} = \sqrt[3]{2z} \cdot 0 = 0$$