2. стр 9/6

а) $$\sqrt[3]{\frac{xy}{x+y}} = \sqrt[3]{\frac{xy}{x+y}\cdot\frac{(x+y)^2}{(x+y)^2}} = \sqrt[3]{\frac{xy(x+y)^2}{(x+y)^3}} = \frac{\sqrt[3]{xy(x+y)^2}}{\sqrt[\cancel{3}]{(x+y)^{\cancel{3}}}}$$

$$= \frac{\sqrt[3]{xy(x+y)^2}}{x+y}$$

б) $$\sqrt{\frac{x}{y}+\frac{y}{x}} = \sqrt{\frac{x^2+y^2}{xy}} = \sqrt{\frac{x^2+y^2}{xy}\cdot\frac{xy}{xy}} = \frac{\sqrt{xy(x^2+y^2)}}{xy}$$

3 б) $$\left(\frac{a\sqrt{a}+b\sqrt{b}}{\sqrt{a}+\sqrt{b}}^{\backslash 1} - \overset{\sqrt{a}+\sqrt{b}}{\sqrt{ab}}\right)\cdot\left(\frac{\sqrt{a}+\sqrt{b}}{a-b}\right)^2 =$$

$$= \frac{a\sqrt{a}+b\sqrt{b}-a\sqrt{b}-b\sqrt{a}}{\cancel{\sqrt{a}+\sqrt{b}}}\cdot\frac{(\sqrt{a}+\sqrt{b})^{\cancel{2}}}{(a-b)^2} =$$

$$= \frac{(a-b)\sqrt{a}-(a-b)\sqrt{b}}{1}\cdot\frac{(\sqrt{a}+\sqrt{b})}{(a-b)^2}$$

$$= \frac{\cancel{(a-b)}(\sqrt{a}-\sqrt{b})}{1}\cdot\frac{(\sqrt{a}+\sqrt{b})}{(a-b)^{\cancel{2}}} =$$

$$= \frac{(\sqrt{a})^2-(\sqrt{b})^2}{(a-b)} = \frac{a-b}{a-b} = 1$$

5. б) $\dfrac{\sqrt{a+b}+\sqrt{a-b}}{\sqrt{a+b}-\sqrt{a-b}} = \dfrac{\sqrt{a+b}+\sqrt{a-b}}{\underbrace{\sqrt{a+b}-\sqrt{a-b}}_{(A\ -\ B)}} \cdot \dfrac{\sqrt{a+b}+\sqrt{a-b}}{\underbrace{\sqrt{a+b}+\sqrt{a-b}}_{(A\ +\ B)}} =$

$= \dfrac{(\sqrt{a+b}+\sqrt{a-b})^2}{\underbrace{(\cancel{\sqrt{a+b}})^{\cancel{2}} - (\cancel{\sqrt{a-b}})^{\cancel{2}}}_{A^2\ -\ B^2}} = \dfrac{(\cancel{\sqrt{a+b}})^{\cancel{2}} + 2\sqrt{a+b}\cdot\sqrt{a-b} + (\cancel{\sqrt{a-b}})^{\cancel{2}}}{a+b-(a-b)} =$

$= \dfrac{a+\cancel{b}+2\sqrt{a^2-b^2}+a-\cancel{b}}{\cancel{a}+b-\cancel{a}+b} = \dfrac{2a+2\sqrt{a^2-b^2}}{2b} =$

$= \dfrac{\cancel{2}(a+\sqrt{a^2-b^2})}{\cancel{2}b} = \dfrac{a+\sqrt{a^2-b^2}}{b}$

в) $\dfrac{1}{1+\sqrt{2}-\sqrt{3}} = \dfrac{1}{\underbrace{(1+\sqrt{2})-\sqrt{3}}_{(A\ -\ B)}} \cdot \dfrac{(1+\sqrt{2})+\sqrt{3}}{\underbrace{(1+\sqrt{2})+\sqrt{3}}_{(A\ +\ B)}} =$

$= \dfrac{1+\sqrt{2}+\sqrt{3}}{\underbrace{(1+\sqrt{2})^2-(\cancel{\sqrt{3}})^{\cancel{2}}}_{A^2\ -\ B^2}} = \dfrac{1+\sqrt{2}+\sqrt{3}}{1+2\sqrt{2}+(\cancel{\sqrt{2}})^{\cancel{2}}-3} =$

$= \dfrac{1+\sqrt{2}+\sqrt{3}}{\cancel{1}+2\sqrt{2}+\cancel{2}-\cancel{3}} = \dfrac{1+\sqrt{2}+\sqrt{3}}{2\sqrt{2}} \cdot \dfrac{\sqrt{2}}{\sqrt{2}} =$

$= \dfrac{\sqrt{2}(1+\sqrt{2}+\sqrt{3})}{4}$

6. б) $$\frac{x-y}{\sqrt[3]{x^2}+\sqrt[3]{xy}+\sqrt[3]{y^2}} = \underbrace{\frac{x-y}{\sqrt[3]{x^2}+\sqrt[3]{xy}+\sqrt[3]{y^2}}}_{(A^2+AB+B^2)} \cdot \underbrace{\frac{\sqrt[3]{x}-\sqrt[3]{y}}{\sqrt[3]{x}-\sqrt[3]{y}}}_{(A-B)} =$$

$$= \frac{(x-y)(\sqrt[3]{x}-\sqrt[3]{y})}{\underbrace{(\sqrt[3]{x})^3-(\sqrt[3]{y})^3}_{A^3-B^3}} = \frac{\cancel{(x-y)}(\sqrt[3]{x}-\sqrt[3]{y})}{\cancel{x-y}} = \sqrt[3]{x}-\sqrt[3]{y}$$

в) $$\frac{1}{\sqrt[3]{x+1}-\sqrt[3]{x}} = \frac{1}{\sqrt[3]{x+1}-\sqrt[3]{x}} \cdot \frac{\sqrt[3]{(x+1)^2}+\sqrt[3]{(x+1)x}+\sqrt[3]{x^2}}{\sqrt[3]{(x+1)^2}+\sqrt[3]{(x+1)x}+\sqrt[3]{x^2}} =$$

$$= \frac{\sqrt[3]{(x+1)^2}+\sqrt[3]{(x+1)x}+\sqrt[3]{x^2}}{(\sqrt[3]{x+1})^3-(\sqrt[3]{x})^3} = \frac{\sqrt[3]{(x+1)^2}+\sqrt[3]{(x+1)x}+\sqrt[3]{x^2}}{x+1-x} =$$

$$= \sqrt[3]{(x+1)^2}+\sqrt[3]{(x+1)x}+\sqrt[3]{x^2}$$

г) $$\frac{5}{\sqrt[3]{4}-\sqrt[3]{6}+\sqrt[3]{9}} = \underbrace{\frac{5}{\sqrt[3]{2^2}-\sqrt[3]{2\cdot 3}+\sqrt[3]{3^2}}}_{(a^2-ab+b^2)} \cdot \underbrace{\frac{\sqrt[3]{2}+\sqrt[3]{3}}{\sqrt[3]{2}+\sqrt[3]{3}}}_{(a+b)} =$$

$$= \frac{5\cdot(\sqrt[3]{2}+\sqrt[3]{3})}{\underbrace{(\sqrt[3]{2})^3+(\sqrt[3]{3})^3}_{a^3+b^3}} = \frac{\cancel{5}(\sqrt[3]{2}+\sqrt[3]{3})}{\cancel{2+3}} = \sqrt[3]{2}+\sqrt[3]{3}$$