СТЕПЕН И КОРЕН

задаци за вежбање

Израчунати вредност израза:

1.

$$\frac{\sqrt{x}-\sqrt{x+1}}{\sqrt{x}+\sqrt{x+1}}-\frac{\sqrt{x+1}+\sqrt{x}}{\sqrt{x+1}-\sqrt{x}}$$

2.

$$\left(\frac{\sqrt{a}}{2}-\frac{1}{2\sqrt{a}}\right)^2\cdot\left(\frac{\sqrt{a}-1}{\sqrt{a}+1}-\frac{\sqrt{a}+1}{\sqrt{a}-1}\right)$$

3.

$$\left(\frac{b-x}{\sqrt{b}-\sqrt{x}}-\frac{b^{\frac{3}{2}}-x^{\frac{3}{2}}}{b-x}\right)\cdot b^{-\frac{1}{2}}x^{-\frac{1}{2}}$$

4.

$$\left[\frac{1}{\left(a^{\frac{1}{2}}+b^{\frac{1}{2}}\right)^{-2}}-\left(\frac{\sqrt{a}-\sqrt{b}}{a^{\frac{3}{2}}-b^{\frac{3}{2}}}\right)^{-1}\right]\cdot(ab)^{-1}$$

5.

$$\left[\frac{x^{\frac{1}{2}}+y^{\frac{1}{2}}}{x^{\frac{1}{2}}-y^{\frac{1}{2}}}-\frac{x^{\frac{1}{2}}-y^{\frac{1}{2}}}{x^{\frac{1}{2}}+y^{\frac{1}{2}}}\right]\cdot\left(y^{-\frac{1}{2}}-x^{-\frac{1}{2}}\right)$$

6.

$$\frac{2\sqrt{x}}{\sqrt{a}+\sqrt{x}}+\left[\frac{a\sqrt{a}+x\sqrt{x}}{\sqrt{a}+\sqrt{x}}-\sqrt{ax}\right]:(a-x)$$

7.

$$\left(\frac{a\sqrt{a}+b\sqrt{b}}{\sqrt{a}+\sqrt{b}}-\sqrt{ab}\right)\cdot\left(\frac{\sqrt{a}+\sqrt{b}}{a-b}\right)^2$$

8.

$$\frac{\sqrt{x}+\sqrt{y}-1}{x+\sqrt{xy}}+\frac{\sqrt{x}-\sqrt{y}}{2\sqrt{xy}}\cdot\left[\frac{\sqrt{y}}{x-\sqrt{xy}}+\frac{\sqrt{y}}{x+\sqrt{xy}}\right]$$

9.

$$\left(\frac{a+2}{\sqrt{2a}}-\frac{a}{\sqrt{2a}+2}+\frac{2}{a-\sqrt{2a}}\right)\cdot\frac{\sqrt{a}-\sqrt{2}}{a+2}$$

10.

$$\left(\frac{3\sqrt{a}}{\sqrt{a}-1}-\frac{2\sqrt{a}}{\sqrt{a}+1}-\frac{a}{a-1}\right)\cdot\frac{a-1}{\sqrt{a}}$$

11.

$$\left(\frac{1}{\sqrt{a}+1}-\frac{1}{\sqrt{a}-1}+\frac{2\sqrt{a}}{a-1}\right):\frac{10}{\sqrt{a}+1}$$

12.

$$\left(\frac{3x+2\sqrt{x}}{4-9x}+\frac{x\sqrt{x}}{2+3\sqrt{x}}-\frac{\sqrt{x}}{2-3\sqrt{x}}\right)\cdot\frac{2+3\sqrt{x}}{\sqrt{x^5}}$$

13.

$$\left(\frac{a\sqrt{a}}{2\sqrt{a}-1}-\frac{a}{2\sqrt{a}+1}-\frac{a}{4a-1}\right)\cdot\frac{2\sqrt{a}+1}{\sqrt{a^5}}$$

14.

$$\left[\frac{a+\sqrt{a^2-b^2}}{a-\sqrt{a^2-b^2}}-\frac{a-\sqrt{a^2-b^2}}{a+\sqrt{a^2-b^2}}\right]:\frac{4a\sqrt{a^2-b^2}}{b^2}$$

15.

$$\frac{a}{2}+\frac{\sqrt{a-2}}{\sqrt{a+2}+\sqrt{a-2}}-\frac{\sqrt{a-2}}{\sqrt{a+2}-\sqrt{a-2}}$$

16.

$$\left[-\frac{1}{\sqrt{p}+\sqrt{q}}-\frac{1}{\sqrt{p^3}-\sqrt{q^3}}:\frac{1}{p+\sqrt{pq}+q}\right]\cdot\frac{p-q}{2p}+\frac{1}{p+\sqrt{p}}$$

17.

$$\frac{p^{\frac{3}{2}}-q^{\frac{3}{2}}}{\sqrt{p}+\sqrt{q}-\dfrac{\sqrt{pq}}{\sqrt{p}+\sqrt{q}}}-\frac{p^{\frac{3}{2}}+q^{\frac{3}{2}}}{\sqrt{p}-\sqrt{q}+\dfrac{\sqrt{pq}}{\sqrt{p}-\sqrt{q}}}$$

18.

$$\left(\frac{2a+a^{\frac{1}{2}}b^{\frac{1}{2}}}{3a}\right)^{-1}\cdot\left(\frac{a^{\frac{3}{2}}-b^{\frac{3}{2}}}{a-a^{\frac{1}{2}}b^{\frac{1}{2}}}-\frac{a-b}{\sqrt{a}+\sqrt{b}}\right)$$

19.

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

20.

а)

$$\frac{\left(2+\sqrt{3}\right)^2-1}{\left(\sqrt{3}+1\right)^2}$$

б)

$$\frac{4-\left(3+\sqrt{5}\right)^2}{\left(1+\sqrt{5}\right)^2}$$

в)

$$\frac{\left(4+\sqrt{7}\right)^2-9}{\left(1+\sqrt{7}\right)^2}$$

21.

$$\left(\frac{2}{\sqrt{3}-1}+\frac{3}{\sqrt{3}-2}+\frac{15}{3-\sqrt{3}}\right)\cdot\left(\sqrt{3}+5\right)^{-1}$$

22.

$$\left(\frac{15}{\sqrt{6}+1}+\frac{4}{\sqrt{6}-2}-\frac{12}{3-\sqrt{6}}\right)\cdot\left(\sqrt{6}+11\right)$$

23.

$$\left(\frac{\sqrt{3}+2}{\sqrt{3}+1} - \frac{1}{\sqrt{3}+3}\right) \cdot \left(\frac{\sqrt{3}+2}{\sqrt{3}+3} + \frac{1}{\sqrt{3}+1}\right)^{-1}$$

24.

$$\left(\frac{1}{\sqrt{3}-\sqrt{2}} + \frac{2}{\sqrt{8}+\sqrt{12}}\right) : \frac{1}{\sqrt{3}}$$

25.

$$\frac{2-\sqrt{3}}{2+\sqrt{3}} + \frac{\sqrt{3}-\sqrt{2}}{\sqrt{3}+\sqrt{2}} + \frac{2+\sqrt{3}}{2-\sqrt{3}} - \frac{\sqrt{3}+\sqrt{2}}{\sqrt{3}-\sqrt{2}}$$

26. *Рационалисати именилац:*

а)

$$\frac{1}{1+\sqrt{2}+\sqrt{3}}$$

б)

$$\frac{2\sqrt{30}}{\sqrt{5}+\sqrt{6}+\sqrt{7}}$$

в)

$$\frac{3+\sqrt{2}+\sqrt{3}}{3-\sqrt{2}-\sqrt{3}}$$

г)

$$\frac{2-\sqrt{2}-\sqrt{3}}{2+\sqrt{2}-\sqrt{3}}$$