

876. Za koji prirodan broj važi jednakost:

$$\frac{1}{\sqrt{2}+1} + \frac{1}{\sqrt{3}+\sqrt{2}} + \frac{1}{\sqrt{4}+\sqrt{3}} + \dots + \frac{1}{\sqrt{n+1}+\sqrt{n}} = 15 \text{ ?}$$

$$\frac{1}{\sqrt{2}+1} + \frac{1}{\sqrt{3}+\sqrt{2}} + \frac{1}{\sqrt{4}+\sqrt{3}} + \dots + \frac{1}{\sqrt{n+1}+\sqrt{n}} = 15$$

$$\frac{1}{\sqrt{2}+1} \cdot \frac{\sqrt{2}-1}{\sqrt{2}-1} + \frac{1}{\sqrt{3}+\sqrt{2}} \cdot \frac{\sqrt{3}-\sqrt{2}}{\sqrt{3}-\sqrt{2}} + \frac{1}{\sqrt{4}+\sqrt{3}} \cdot \frac{\sqrt{4}-\sqrt{3}}{\sqrt{4}-\sqrt{3}} + \dots + \frac{1}{\sqrt{n+1}+\sqrt{n}} \cdot \frac{\sqrt{n+1}-\sqrt{n}}{\sqrt{n+1}-\sqrt{n}} = 15$$

$$\frac{\sqrt{2}-1}{2-1} + \frac{\sqrt{3}-\sqrt{2}}{3-2} + \frac{\sqrt{4}-\sqrt{3}}{4-3} + \dots + \frac{\sqrt{n+1}-\sqrt{n}}{n+1-n} = 15$$

$$\frac{\sqrt{2}-1}{1} + \frac{\sqrt{3}-\sqrt{2}}{1} + \frac{\sqrt{4}-\sqrt{3}}{1} + \dots + \frac{\sqrt{n+1}-\sqrt{n}}{1} = 15$$

$$\sqrt{2}-1 + \sqrt{3}-\sqrt{2} + \sqrt{4}-\sqrt{3} + \dots + \sqrt{n+1}-\sqrt{n} = 15$$

$$-1 + \sqrt{n+1} = 15$$

$$\sqrt{n+1} = 16$$

$$n+1 = 256$$

$$n = 255$$