

$$\frac{1}{\sqrt{1} + \sqrt{2}} + \frac{1}{\sqrt{2} + \sqrt{3}} + \dots + \frac{1}{\sqrt{99} + \sqrt{100}}$$

$$\frac{1(\sqrt{1} - \sqrt{2})}{(\sqrt{1} + \sqrt{2})(\sqrt{1} - \sqrt{2})} = \frac{\sqrt{1} - \sqrt{2}}{1 + \sqrt{2} + \sqrt{2} + -2} = \frac{\sqrt{1} - \sqrt{2}}{-1}$$

$$\frac{1(\sqrt{2} - \sqrt{3})}{(\sqrt{2} + \sqrt{3})(\sqrt{2} - \sqrt{3})} = \frac{\sqrt{2} - \sqrt{3}}{2 + \sqrt{6} + \sqrt{6} + -9} = \frac{\sqrt{2} - \sqrt{3}}{-1}$$

$$\frac{1(\sqrt{3} - \sqrt{4})}{(\sqrt{3} + \sqrt{4})(\sqrt{3} - \sqrt{4})} = \frac{\sqrt{3} - \sqrt{4}}{3 + \sqrt{12} + \sqrt{12} + -16} = \frac{\sqrt{3} - \sqrt{4}}{-1}$$

$$\frac{\sqrt{1} - \sqrt{2}}{-1} + \frac{\sqrt{2} - \sqrt{3}}{-1} + \frac{\sqrt{3} - \sqrt{4}}{-1}$$

Every number would get cancelled out when you add the fractions.

You would end up with:

$$\frac{\sqrt{1} - \sqrt{100}}{-1} = \frac{1 - 10}{-1} \times (-1) = \frac{-1 + 10}{= 9}$$

$$\frac{1}{\sqrt{1} + \sqrt{2}} + \frac{1}{\sqrt{2} + \sqrt{3}} + \dots + \frac{1}{\sqrt{99} + \sqrt{100}}$$

$$\underline{\underline{= 9}}$$