

## CHAPITRE 0 : RENTRÉE

## Correction

On a

$$K = \frac{1}{\sqrt{2} + \sqrt{3}} = \frac{\sqrt{2} - \sqrt{3}}{(\sqrt{2} + \sqrt{3})(\sqrt{2} - \sqrt{3})} = \frac{\sqrt{2} - \sqrt{3}}{(\sqrt{2})^2 - (\sqrt{3})^2} = \frac{\sqrt{2} - \sqrt{3}}{2 - 3} = \sqrt{3} - \sqrt{2}.$$

De même, on a

$$\begin{aligned} L &= \frac{1}{\sqrt{2} + \sqrt{3} + \sqrt{5}} = \frac{\sqrt{2} + \sqrt{3} - \sqrt{5}}{(\sqrt{2} + \sqrt{3} + \sqrt{5})(\sqrt{2} + \sqrt{3} - \sqrt{5})} \\ &= \frac{\sqrt{2} + \sqrt{3} - \sqrt{5}}{(\sqrt{2} + \sqrt{3})^2 - (\sqrt{5})^2} = \frac{\sqrt{2} + \sqrt{3} - \sqrt{5}}{2 + 2\sqrt{2}\sqrt{3} + 3 - 5} \\ &= \frac{\sqrt{2} + \sqrt{3} - \sqrt{5}}{2\sqrt{6}} = \frac{(\sqrt{2} + \sqrt{3} - \sqrt{5})\sqrt{6}}{2(\sqrt{6})^2} \\ &= \frac{(\sqrt{2} + \sqrt{3} - \sqrt{5})\sqrt{6}}{12} = \frac{2\sqrt{3} + 3\sqrt{2} - \sqrt{30}}{12}. \end{aligned}$$