

数学 I・A 第 1 問 [1]

$$\begin{aligned} AB &= \frac{1}{1+\sqrt{3}+\sqrt{6}} \cdot \frac{1}{1-\sqrt{3}+\sqrt{6}} = \frac{1}{\{(1+\sqrt{6})+\sqrt{3}\}\{(1+\sqrt{6})-\sqrt{3}\}} \\ &= \frac{1}{(1+\sqrt{6})^2-3} = \frac{1}{2\sqrt{6}+4} \\ &= \frac{\sqrt{6}-2}{2(\sqrt{6}+2)(\sqrt{6}-2)} = \frac{\sqrt{6}-2}{4} \dots\dots \textcircled{1} \end{aligned}$$

$$\frac{1}{A} + \frac{1}{B} = (1+\sqrt{3}+\sqrt{6}) + (1-\sqrt{3}+\sqrt{6}) = 2+2\sqrt{6} \dots\dots \textcircled{2}$$

また、 $\frac{1}{A} + \frac{1}{B} = \frac{A+B}{AB}$ であるから $A+B = AB\left(\frac{1}{A} + \frac{1}{B}\right)$

これに ①, ② を代入して

$$A+B = \frac{\sqrt{6}-2}{4} \cdot (2+2\sqrt{6}) = \frac{(\sqrt{6}-2)(\sqrt{6}+1)}{2} = \frac{4-\sqrt{6}}{2}$$