

2012年第1問

数理
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1 $\frac{1}{2} \left(\frac{2-\sqrt{3}}{2+\sqrt{3}} + \frac{2+\sqrt{3}}{2-\sqrt{3}} \right)$ の値を求めよ.

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

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

$$\begin{aligned} \therefore (\text{与式}) &= \frac{1}{2} \{ (2-\sqrt{3})^2 + (2+\sqrt{3})^2 \} \\ &= \frac{1}{2} (7 + 7) \\ &= \underline{\underline{7}} \end{aligned}$$