

9. cont.

ex 9.3, exemplar 1x

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$$\Rightarrow \text{ar}(\triangle ASR) = \frac{1}{4} \text{ar}(\triangle ABD) \quad \dots \textcircled{I}$$

Similarly

$$\text{ar}(\triangle CPQ) = \frac{1}{4} \text{ar}(\triangle CBD) \quad \dots \textcircled{II}$$

$$\text{ar}(\triangle BPS) = \frac{1}{4} \text{ar}(\triangle BAC) \quad \dots \textcircled{III}$$

$$\text{ar}(\triangle DRQ) = \frac{1}{4} \text{ar}(\triangle DAC) \quad \dots \textcircled{IV}$$

$$\textcircled{I} + \textcircled{II} + \textcircled{III} + \textcircled{IV}$$

$$\text{ar}(\triangle ASR) + \text{ar}(\triangle CPQ) + \text{ar}(\triangle BPS) + \text{ar}(\triangle DRQ)$$

$$= \frac{1}{4} [\text{ar}(\triangle ABD) + \text{ar}(\triangle CBD) + \text{ar}(\triangle BAC) + \text{ar}(\triangle DAC)]$$

$$= \frac{1}{4} [\text{ar}(\square ABCD) + \text{ar}(\square ABCD)]$$

$$= \frac{1}{4} \times 2 \text{ar}(\square ABCD)$$

$$= \frac{1}{2} \text{ar}(\square ABCD)$$

$$\therefore \text{ar}(\triangle ASR) + \text{ar}(\triangle CPQ) + \text{ar}(\triangle BPS) + \text{ar}(\triangle DRQ) = \frac{1}{2} \text{ar}(\square ABCD)$$

$$\Rightarrow \text{ar}(\square ABCD) - \text{ar}(\text{Ilgm PQRS}) = \frac{1}{2} \text{ar}(\square ABCD)$$

$$\Rightarrow \text{ar}(\text{Ilgm PQRS}) = \text{ar}(\square ABCD) - \frac{1}{2} \text{ar}(\square ABCD)$$

$$\Rightarrow \text{ar}(\text{Ilgm PQRS}) = \frac{1}{2} \text{ar}(\square ABCD)$$

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