From ratios ① & ②,

$$\frac{RO}{RL} = \frac{5-3\sqrt{2}}{4} \text{ cm}$$

$$\frac{RS}{RA} = \frac{(5\sqrt{2}-6)(\sqrt{2})}{(4+\sqrt{2})(\sqrt{2})}$$

$$= \frac{5(2)-6\sqrt{2}}{4(2)}$$

$$= \frac{10-6\sqrt{2}}{8}$$

$$= \frac{2(5-3\sqrt{2})}{8}$$

$$\frac{RS}{RA} = \frac{5-3\sqrt{2}}{4} \text{ cm}$$

then, $\frac{RO}{RL} = \frac{RS}{RA}$

SO, (OS) is parallel to (LA)

In Δ's ROS & RLA we have:

(OS) // (LA) (given)

O & S belong to [RL] & [RA] respectively (given)

SO, Apply Thales' property: Any st. line parallel to a side of a Δ, it divides its sides proportionally.

Ratios: $\frac{RO}{RL}^{①} = \frac{RS}{RA}^{②} = \frac{OS}{LA}^{③}$

From ratios ① & ③

$$\frac{RO}{RL} = \frac{OS}{LA}$$

$$\frac{5-3\sqrt{2}}{4} \times \frac{OS}{4}$$

SO, $OS = (5-3\sqrt{2})$ cm

* $OS = 5-3\sqrt{2}$

$= 0.757\ldots$

$OS = 7.57 \times 10^{-1}$ (Scientific notation)