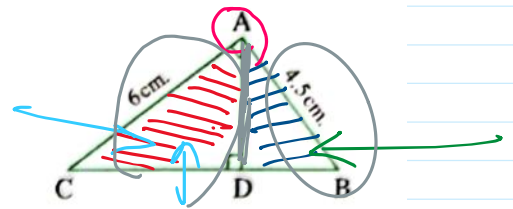


[a] In the opposite figure :

$m(\angle BAC) = 90^\circ, \overline{AD} \perp \overline{BC}$

, $AB = 4.5$ cm. and $AC = 6$ cm.

Find the length of each of : \overline{BD} , \overline{DC} and \overline{AD}



[b] ABCD is a cyclic quadrilateral in which : $BC = 27$ cm. , $AB = 12$ cm. , $AD = 8$ cm. , $DC = 12$ cm. and $AC = 18$ cm. Prove that : $\Delta BAC \sim \Delta ADC$ and find the ratio between their two surface areas.

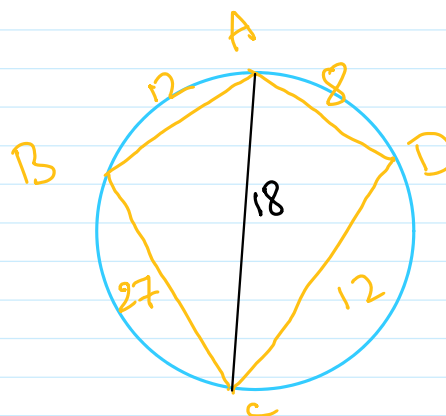
$$BC = \sqrt{4.5^2 + 6^2} = 7.5 \text{ cm}$$

$$BD = \frac{4.5 \times 4.5}{7.5} =$$

$$AD = \frac{4.5 \times 6}{7.5} =$$

$$DC = \frac{6 \times 6}{7.5} =$$

$$\left. \begin{aligned} \Delta BAC &\sim \Delta BDA \\ \frac{BA}{BD} &= \frac{AC}{DA} = \frac{BC}{BA} \\ \frac{4.5}{BD} &= \frac{6}{DA} = \frac{7.5}{4.5} \end{aligned} \right\} \Delta BAC \sim \Delta ADC$$



$$\frac{BA}{AD} = \frac{AC}{DC} = \frac{BC}{AC}$$

$$\frac{12}{8} = \frac{18}{12} = \frac{27}{18}$$

b

$$\Delta BAC \sim \Delta ADC$$

$$\frac{BA}{AD} = \frac{12}{8} = \frac{3}{2}$$

$$\frac{BC}{AC} = \frac{27}{18} = \frac{3}{2}$$

$$\frac{AC}{DC} = \frac{18}{12} = \frac{3}{2}$$

$$\therefore \frac{BA}{AD} = \frac{AC}{DC} = \frac{BC}{AC} = \left(\frac{3}{2}\right)^2$$

$$\therefore \frac{\text{A. } \Delta BAC}{\text{A. } \Delta ADC} = \frac{9}{4}$$