Exercise 11A

Question 19:

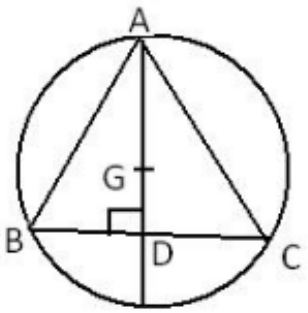
Let ΔABC be an equilateral triangle of side 9 cm.

Let AD be one of its medians.

Then, $AD \perp BC$

and $BD = \frac{1}{2} \times BC$

$= \left(\frac{1}{2} \times 9\right) cm = 4.5 \text{ cm}.$



$\therefore$ In right angled ΔADB,

$AB^2 = AD^2 + BD^2$

$\Rightarrow AD^2 = AB^2 - BD^2$

$\Rightarrow AD = \sqrt{AB^2 - BD^2}$

$= \sqrt{(9)^2 - \left(\frac{9}{2}\right)^2}$ cm $= \frac{9\sqrt{3}}{2}$ cm

In an equilateral triangle, the centroid and circumcentre coincide and $AG : GD = 2 : 1$

$\therefore$ radius $AG = \frac{2}{3} AD$

$= \left(\frac{2}{3} \times \frac{9\sqrt{3}}{2}\right) cm = 3\sqrt{3}$ cm

$\therefore$ The radius of the circle is $3\sqrt{3}$ cm.

********** END **********