Thus, D is midpt of [AF] (by converse of mid pt theorem in any Δ)

3) $FC = 2OD$ (by midpt theorem in ΔAFC)
but [OD] is a radius of (C)
And $AC = 10$ cm (diameter of (C))
So, $OD = \frac{AC}{2}$ (radius & diameter of same circle)

$OD = 3$cm

Hence $\boxed{FC = 6 \text{ cm}}$

In ΔADC we have:
D is a pt of (C) with diameter [AC] (given)
So, $A\hat{D}C = 90°$ (inscribed angle facing diameter)
$D\hat{A}C = 30°$ (proved)
So, ΔADC is semi equilateral at D. (having 90 & 30° ∢s)

hence $AD = \frac{\sqrt{3}}{2}$ hyp (side facing 60°)
①

$= \frac{\sqrt{3}}{2}(AC)$
$AD = 5\sqrt{3}$cm
but D is midpt of [AF] proved.
Thus, $AF = 2AD$
$AF = 10\sqrt{3}$.cm

In ΔADI we have:
$D\hat{A}I = 30°$, $D\hat{I}A = 90°$ (proved)
So ΔADI is semi equilateral at I.
Thus, $AI = \frac{\sqrt{3}}{2}$ hyp (①)

$AI = \frac{\sqrt{3}}{2} AD = \frac{\sqrt{3}}{2}(5\sqrt{3}) = 7.5$ cm