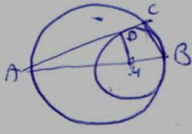


3.53
4



माना $AM = MD = x$
(स) $\triangle AMD \sim \triangle ABC$

$$\frac{AM}{AB} = \frac{MD}{CB}$$

$$CB = \frac{2Rx}{2R-x} \leftarrow \frac{2R-x}{2R} = \frac{x}{CB}$$

$$AC^2 = AB^2 - BC^2$$

मिथ्या गणना से

$$AC = \sqrt{4R^2 - \left(\frac{2Rx}{2R-x}\right)^2} = 2R \sqrt{1 - \frac{x^2}{(2R-x)^2}} = \frac{2R}{2R-x} \sqrt{4R^2 - 4Rx}$$

$$S_{ABC} = \frac{AC \cdot BC}{2} = \frac{2R}{2(2R-x)} \sqrt{4R^2 - 4Rx} \cdot \frac{2Rx}{2R-x} = \frac{4R^2 x}{(2R-x)^2} \sqrt{R^2 - Rx}$$

$$f = S_{AHC} = \frac{1}{2} AC \cdot MD = \frac{1}{2} \cdot \frac{2R}{2R-x} \sqrt{4R^2 - 4Rx} \cdot x = \frac{2R}{2R-x} \sqrt{R^2 x^2 - Rx^3} \quad \cdot 6$$

$$f' = \frac{2R \left[\frac{(2R^2 x - 3Rx^2)(2R-x) + \sqrt{R^2 x^2 - Rx^3}}{2\sqrt{R^2 x^2 - Rx^3}} \right]}{(2R-x)^2} = \frac{(2R^2 x - 3Rx^2)(2R-x) + 2(R^2 x^2 - Rx^3)}{2(2R-x)^2}$$

$$0 = \frac{4R^3 x - 6R^2 x^2 + Rx^3}{2(2R-x)^2} \rightarrow xR(4R^2 - 6Rx + x^2) = 0$$

$$x \neq 0 \quad \downarrow$$

$$R \neq 0 \quad x = R(3 \pm \sqrt{5})$$

$$x = R(3 - \sqrt{5}) \quad \text{पूरी } x < R$$