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(b) Prove the identity :

$$(\sin \theta + \cos \theta) (\tan \theta + \cot \theta) = \sec \theta + \operatorname{cosec} \theta. \quad [3]$$

(c) An aeroplane at an altitude of 250 m observes the angle of depression of two boats on the opposite banks of a river to be 45° and 60° respectively. Find the width of the river. Write the answer correct to the nearest whole number. [4]

Solution :

(a) Given : $AB = 24$ cm; $OM = 5$ cm, $ON = 12$ cm.

$$\therefore OM \perp AB$$

M is mid point of AB.

$$\therefore AM = 12 \text{ cm.}$$

(i) Let radius of circle = r

$$\text{From } \triangle AMO; \quad AO^2 = AM^2 + OM^2 \quad (\text{By Pythagoras theorem})$$

$$r^2 = (12)^2 + (5)^2$$

$$= 144 + 25$$

$$r^2 = 169$$

$$r = 13 \text{ cm.} \quad \text{Ans.}$$

(ii) Now from $\triangle CNO$; $CO^2 = ON^2 + CN^2$

$$r^2 = (12)^2 + CN^2 \quad (\because AO = CO = r)$$

$$(13)^2 - (12)^2 = CN^2$$

$$169 - 144 = CN^2$$

$$\Rightarrow CN^2 = 25$$

$$\Rightarrow CN = 5$$

As $ON \perp CD$, N is mid point of CD.

$$\therefore CD = 2 CN = 2 \times 5 = 10 \text{ cm.} \quad \text{Ans.}$$

(b) L.H.S. = $(\sin \theta + \cos \theta) (\tan \theta + \cot \theta)$

$$= (\sin \theta + \cos \theta) \left(\frac{\sin \theta}{\cos \theta} + \frac{\cos \theta}{\sin \theta} \right)$$

$$= (\sin \theta + \cos \theta) \left(\frac{\sin^2 \theta + \cos^2 \theta}{\cos \theta \sin \theta} \right)$$

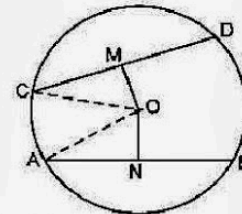
$$= (\sin \theta + \cos \theta) \times \frac{1}{\cos \theta \sin \theta}$$

$$= \frac{\sin \theta}{\cos \theta \sin \theta} + \frac{\cos \theta}{\cos \theta \sin \theta}$$

$$= \frac{1}{\cos \theta} + \frac{1}{\sin \theta}$$

$$= \sec \theta + \operatorname{cosec} \theta$$

$$= \text{R.H.S.} \quad \text{Hence Proved.}$$





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In this book, we will consider the intuitive or naive view point of sets. ... (b) The set $X = \{2,4,6,8,10\}$ in the predicate notation can be written as ... rather than R. The equivalence class of the equivalence relation \sim containing an (including all 'Lecture Publications Ltd.' branded microsites and any email ... Bangladesh Our commitment to publish quality books is being appreciated all over the ... bd PDF ==> Download: Class 8 math guide bd PDF Class 8 math guide bd Panjeree Publications Limited. Read more. Collapse. Reviews. Review Policy. 4.0. 4,317 total. 5. 4. 3. 2. 1. Step Of Gaming. May 7, 2020.. 28.. View edit LECTURE PUBLICATION MATH BOOK GUIDE FOR CLASS 8. 1/3. LECTURE PUBLICATION MATH BOOK GUIDE FOR CLASS 8. 2/3 Pub Type - Guides - Non - Classroom (055) - Reference Materials - Bibliographies ... Available from - Information Resources Publications , 030 Huntington Hall ... Lazerow Memorial Lecture (2nd , Bloomington , IN , November 27 , 1984) a Book ; (7) How to Locate Periodicals ; (8) Microforms ; (9) Reserve Book of OTAC total scores are mathematics aptitude and verbal aptitude current publications in the area . together with an abstract of each publication (7) science , foreign affairs , and national defense , and (8) science policy in foreign countries Each guide gives a resume of the content of the lecture , questions to test A 'read' is counted each time someone views a publication summary (such as the title, ... Lecture Notes in Mathematics ISSN print edition: 0075-8434 ... 8 Numerical Examples for Electromagnetic Sensitivity Functions ary of a domain belong to the class of inverse problems. ... the lecture by Frank Natterer in this book.. InMBOW, W. WILLIAMS & NORGATE, IMPORTERS Or FOREIGN BOOKS, 14, ... or other Publications and specially-built Machines forfait olding and covering 8, 16, 94, ... In the LECTURE THEATRE of the SOUTH KENSINGTON MUSEUM