



VIDYANIKETAN COACHING CLASSES, GHANSAWANGI

Class:-10th
Sub.:- Math-2

Mark's:-25
Time:- 1:30Hr

Q.1) Choose the correct alternative's for each of the following question's. [2]

- i) $\cos \theta \times \sec \theta = \text{-----}$
(A) 0 (B) 1 (C) 2 (D) $\sqrt{2}$
- ii) The value of $9 \cot^2 \theta - 9 \operatorname{cosec}^2 \theta = \text{-----}$
(A) 9 (B) -9 (C) 1 (D) -1

Q.2) Answer the following question's. [Any-3] [6]

- i) If $\operatorname{cosec} \theta = \frac{65}{63}$, then find the value of $\sin \theta$ and $\cos \theta$.
- ii) Find the value of $\sin^2 20^\circ + \sin^2 70^\circ$.
- iii) If $\cos \theta = \frac{3}{5}$, where θ is an acute angle, find the value of $\sin \theta$.
- iv) An observer at a distance of 10 m from a tree looks at the top of the tree, the angle of elevation is 60° .
What is the height of the tree? ($\sqrt{3} = 1.73$)
- v) If $\cos \theta + \frac{1}{\cos \theta} = 4$, then prove that $\cos^2 \theta + \frac{1}{\cos^2 \theta} = 14$

Q.3) Answer the following question's. [Any-3] [9]

- i) Prove: $\frac{\sin \theta}{1 - \cos \theta} = \operatorname{cosec} \theta + \cot \theta$.
- ii) Prove: $\sin^6 \theta + \cos^6 \theta = 1 - 3 \sin^2 \theta \cdot \cos^2 \theta$
- iii) From the top of the light house, an observer looks at a ship and finds the angle of depression to be 30° .
If the height of the light-house is 100 meters, then find how far the ship is from the light-house.
- iv) If $\sin \theta = \frac{5}{13}$, find the values of other trigonometric ratios using identities.
- v) Prove that: $\sec \theta + \tan \theta = \frac{\cos \theta}{1 - \sin \theta}$

Q.4) Solve the following question. [Any-2] [8]

- i) Prove that: $\frac{\sin \theta - \cos \theta + 1}{\sin \theta + \cos \theta - 1} = \frac{1}{\sec \theta - \tan \theta}$
- ii) While landing at an airport, a pilot made an angle of depression of 20° . Average speed of the plane was 200km/hr. The plane reached the ground after 54 seconds. Find the height at which the plane was when it started landing. ($\sin 20^\circ = 0.342$)
- iii) Prove that: $\sec^4 A (1 - \sin^4 A) - 2 \tan^2 A = 1$

Best of Luck.....

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