S.5 SUBSIDIARY MATHEMATICS

TERM 3 HOLIDAY WORK, 2025

Research on trigonometric ratios and their reciprocals, trigonometric identities

Use an Advance Mathematic textbook,
https://www.youtube.com/watch?v=2bcKxawJWfE

Attempt the following questions

1. Show that $sec^2\theta + cosec^2\theta = sec^2\theta cosec^2\theta$
2. Solve the equation $3sin^2\theta + cos\theta + 1 = 0$ for the values of θ from 0^0 to 180^0 inclusive.
3. Solve the equation $1 + cos\theta = 2sin^2\theta$ for values of θ between 0^0 and 360^0.
4. Solve : $2\cos^2 x = \sin x + 1$ for $0^0 \le x \le 360^0$
5. Solve the equation $cosec\theta + 2cot^2\theta = 1$, for $0^0 \le \theta \le 90^0$
6. By eliminating θ from the equations $x = asec\theta$ and $y = b + Kcos\theta$, show that $x(y - b) = Ka$.
7. Solve the equation $cos\theta = sin2\theta$ for values of θ from 0^0 to 360^0.
8. Show that $\frac{1-\cos^2\theta}{\sec^2\theta - 1} = \cos^2\theta$ Hence, solve the equation $\frac{1-\cos^2\theta}{\sec^2\theta - 1} = \frac{3}{4}$, for $0^0 \le \theta \le 90^0$
9. Triangle OAB is such that angle $AOB = 90^0$, angle $ABO = \beta$, $\overline{OB} = 14.4$ cm and $\overline{OA} = 6$ cm. Find $\sin\beta + \cot\beta$.