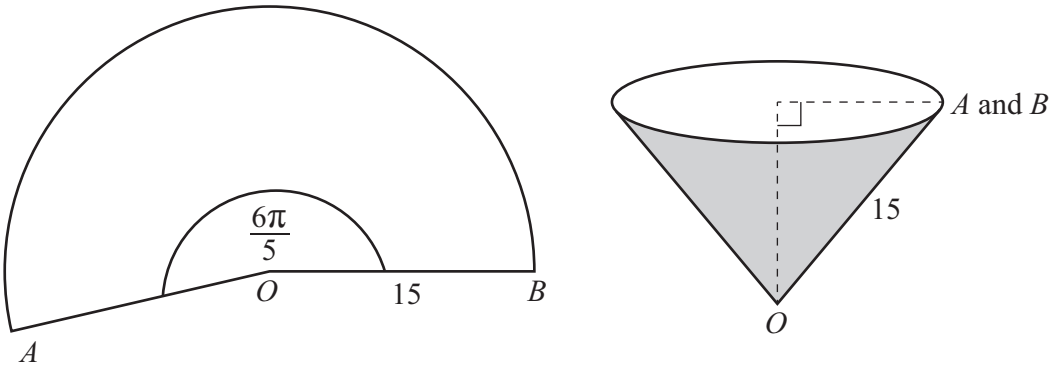
8 **(a)** Solve the equation $(2-3\cot x)\cos x = 0$ for $0 < x \leqslant \frac{\pi}{2}$. [3]

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(b) Solve the equation $2\operatorname{cosec}(2\theta+1) - 12\sin(2\theta+1) = 5$, where θ is in radians and $-1 \leqslant \theta \leqslant 2$. [6]

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9 In this question, all lengths are in centimetres and all angles are in radians.



The diagram shows a sector AOB of a circle, centre O, radius 15.
Angle $AOB = \frac{6\pi}{5}$.
The sector is made into a cone with points A and B touching, as shown.

(a) Find the curved surface area of the cone. [2]

The top of the cone is a horizontal circle.

(b) Find the circumference of the circular top. [2]

(c) Hence find the radius of the circular top and the perpendicular height of the cone. [2]

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