

IB Geometry and Trigonometry Problem 008

The figure below shows the plan of a trapezoidal window.

The figure is not to scale.



Three sides of the window have a length of 2 m . The angle between the slanted sides of the window and the base is θ , where $0 \leq \theta \leq \frac{\pi}{2}$.

- Show that the area of the window is given by $y = 4 \sin \theta + 2 \sin 2\theta$.
- Zoé wants a window with an area of 5 m^2 . Find the two possible values of θ .
- John wants two windows that have the same area A but different values of θ . Find all possible values of A .