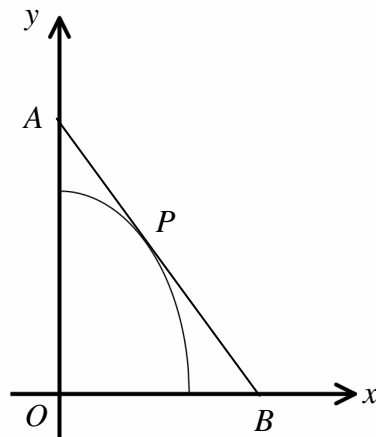**Question**

The figure above shows the curve C with equation

$$y = \frac{b}{a}\sqrt{a^2 - x^2}\,, \ x \geq 0\,,$$

where a and b are constants such that $b > a > 0$.

The point P lies on C and the tangent to C at P meets the coordinate axes at the points A and B, as shown in the figure.

Show with full justification that the minimum area of the triangle AOB, where O is the origin, is ab.