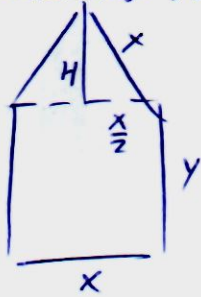


Dimensiones ventana de 10 m de perímetro para área máxima



$$10 = 3x + 2y \quad y = \frac{10 - 3x}{2}$$

$$S = xy + \frac{1}{2}xH = \frac{10x - 3x^2}{2} + \frac{1}{4}x^2\sqrt{3}$$

$$H^2 + \left(\frac{x}{2}\right)^2 = x^2$$

$$H = \sqrt{x^2 - \frac{x^2}{4}} = \sqrt{\frac{3x^2}{4}} = \frac{x}{2}\sqrt{3}$$

$$S' = 5 - 3x + \frac{x}{2}\sqrt{3} = 0$$

$$x\left(3 - \frac{\sqrt{3}}{2}\right) = 5 \quad \boxed{x = \frac{5}{3 - \frac{\sqrt{3}}{2}} = \frac{10}{6 - \sqrt{3}}}$$

$$\begin{aligned} \boxed{y} &= \frac{10 - 3 \cdot \frac{10}{6 - \sqrt{3}}}{2} = \frac{60 - 10\sqrt{3} - 30}{2(6 - \sqrt{3})} = \frac{30 - 10\sqrt{3}}{2(6 - \sqrt{3})} = \frac{15 - 5\sqrt{3}}{6 - \sqrt{3}} = \frac{(15 - 5\sqrt{3})(6 + \sqrt{3})}{33} \\ &= \frac{90 + 15\sqrt{3} - 30\sqrt{3} - 15}{33} = \frac{75 - 15\sqrt{3}}{33} = \frac{25 - 5\sqrt{3}}{11} \end{aligned}$$

$$S'' = -3 + \frac{\sqrt{3}}{2} < 0 \rightarrow \text{MÁXIMO}$$

Completar. $p = 3x + 2y = \frac{30}{6 - \sqrt{3}} + \frac{50 - 10\sqrt{3}}{11} = \frac{30 \cdot 11 + 300 - 60\sqrt{3} - 50\sqrt{3} + 30}{(6 - \sqrt{3}) \cdot 11} =$

$$= \frac{30 \cdot 11 + 30 \cdot 11 - 110\sqrt{3}}{(6 - \sqrt{3}) \cdot 11} = \frac{60 - 10\sqrt{3}}{6 - \sqrt{3}} = 10 \text{ m}$$