

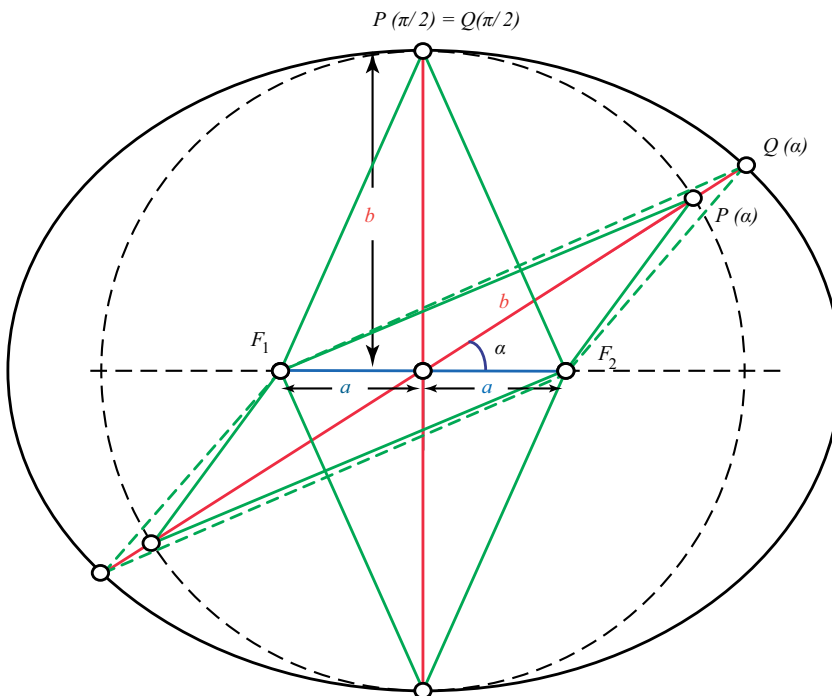
# Proof Without Words: The Parallelogram With Maximum Perimeter for Given Diagonals Is the Rhombus

ÁNGEL PLAZA

Universidad de Las Palmas de Gran Canaria  
Las Palmas, Canaria, Spain  
[angel.plaza@ulpgc.es](mailto:angel.plaza@ulpgc.es)

**Theorem.** *The parallelogram with maximum perimeter for given diagonals is the rhombus.*

*Proof.*



$$|F_1P(\pi/2)| + |F_2P(\pi/2)| = |F_1Q(\alpha)| + |F_2Q(\alpha)| \geq |F_1P(\alpha)| + |F_2P(\alpha)|.$$

■

**Summary.** By using the ellipse with foci at the extreme points of the shortest diagonal and the minor axis being the longest diagonal, it is proved without words that the parallelogram with maximum perimeter for given diagonals is the rhombus.

ÁNGEL PLAZA (MR Author ID: [350023](https://www.jstor.org/terms)) received his masters degree from Universidad Complutense de Madrid in 1984 and his Ph.D. from Universidad de Las Palmas de Gran Canaria in 1993, where he is a full professor in applied mathematics. He is interested in mesh generation and refinement, combinatorics, and visualization support in teaching and learning mathematics.

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