Parabella

Problem

Take any two points A and B on the parabola $y = x^2$.

Draw the line OC through the origin, parallel to AB, cutting the parabola again at C.

Let A have coordinates (a, a^2), let B have coordinates (b, b^2) and let C have coordinates (c, c^2).

Prove that $a + b = c$.

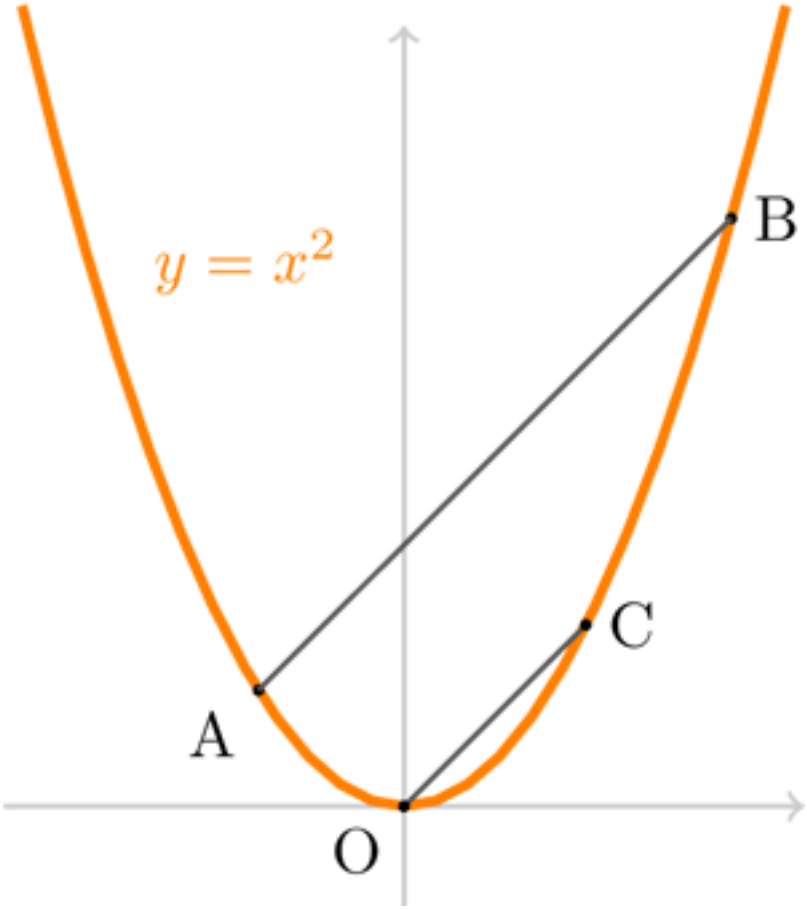

Figure G2_RT12.1: The parabella

Imagine drawing another parallel line DE, where D and E are two other points on the parabola. Extend the ideas of the previous result to prove that the midpoints of each of the three parallel lines lie on a straight line.

Relevance

G2 What is the connection between algebra and geometry, and how can we exploit it?

