

# Lesson 5: Graphs and Geometry V

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**Problem 1.**

An Eulerian path in a graph is a path which passes through every edge exactly once. Show that there exists an Eulerian path in a given graph if and only if the graph is connected and all but exactly two vertices have even degrees.

**Problem 2.**

Show that the segment connecting the midpoints of the opposing sides of a parallelogram goes through the intersection of its diagonals.

**Problem 3.**

Show that the angle bisectors of a triangle intersect at the same point.