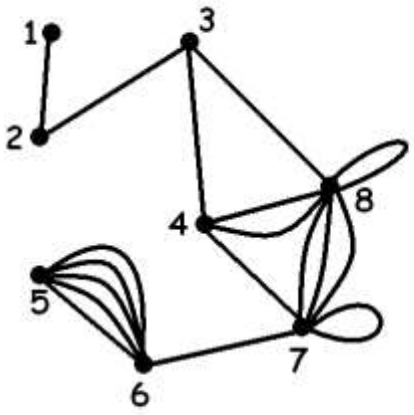
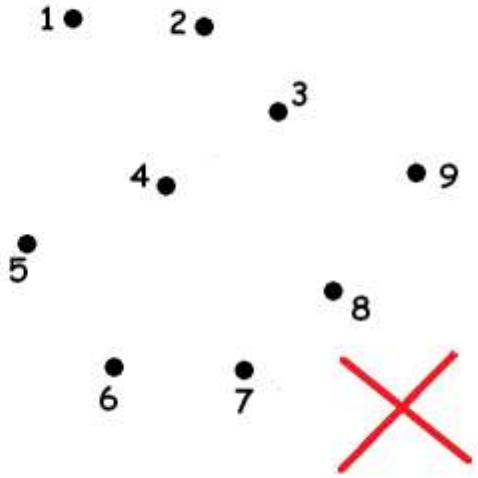
WITHOUT WORDS

Mathematical Puzzles to Confound and Delight

WW 30: SOLUTION





This puzzle wants us to draw edges between dots so that the count of edges emanating from a given dot matches the number at that dot. The first puzzle can be solved (in many different ways), but the second can not. Here's why. (We follow the argument of WW27.)

> Each edge has two "ends" and so, in any completed diagram, the total number of edge ends must be even. But the second diagram wants $1+2+3+4+5+6+7+8+9=45$ edge ends. It thus cannot be solved.

Challenge: For which N can the puzzle with N dots numbered $1, 2, 3, \ldots, N$ be solved?