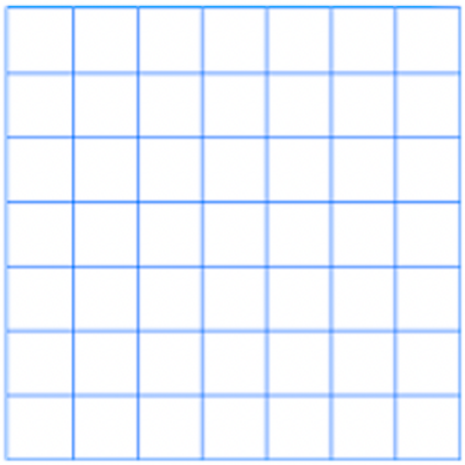
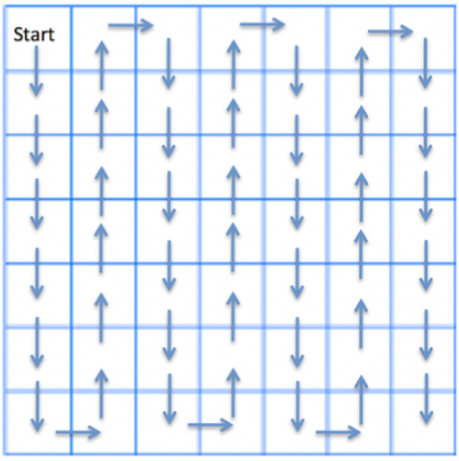
Grid walks

On the 7×7 grid shown below:

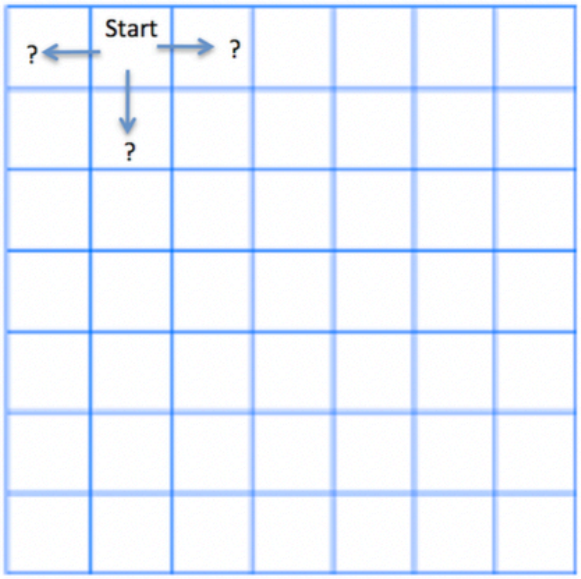


a *walk* from a START square of the grid, consists of a sequence of squares of the grid, beginning with START, and where each succeeding square is adjacent, horizontally or vertically, to the preceding square in the sequence:



The walk shown above passes through each square of the grid once and only once.

From the START square shown below, is it possible to walk so as to reach each square of the grid once and only once. If so, show how, and if not, explain why not:



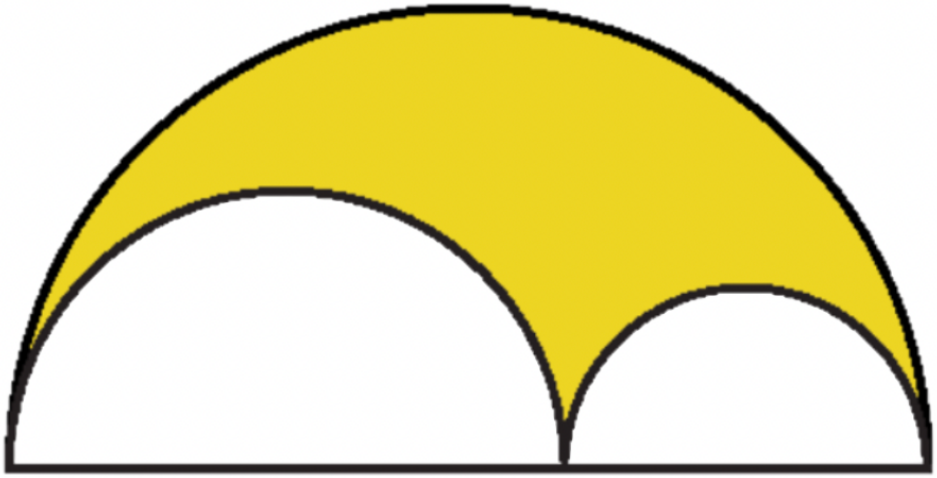
From which squares of the 7×7 grid is it possible to start a walk that reaches each square of the grid once and only once?

What if the 7×7 grid is replaced by an $n \times n$ grid for some other integer n?

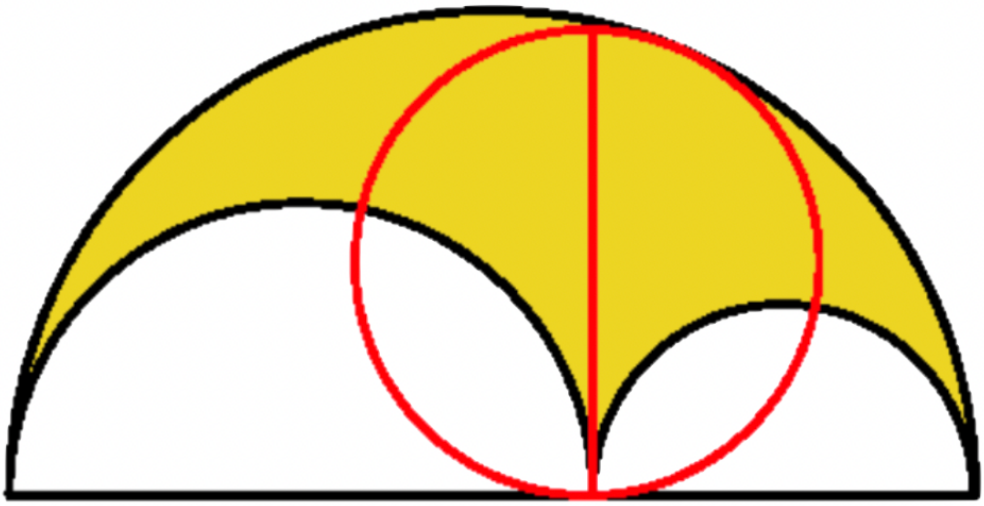
Thanks to James Tanton for opening our eyes to this problem - watch James introduce it with Sunil Singh on YouTube.

Area of an arbelos

The region enclosed by three pairwise tangent semicircles along the same diameter is called an *arbelos*:

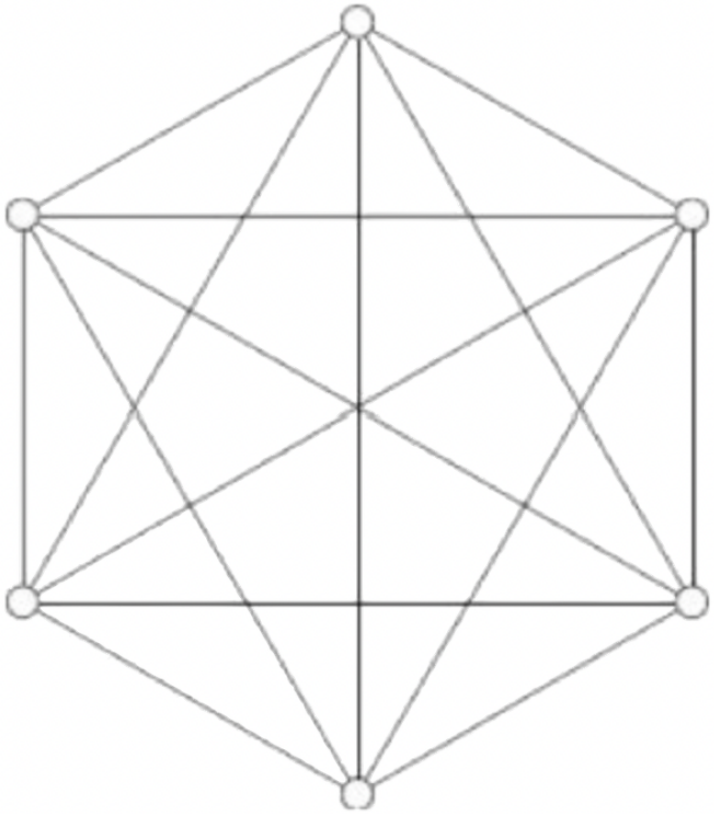


Draw the common tangent line to the two small semicircles as shown. Prove that the area of the arbelos equals the area of the circle with this common tangent line as diameter:



A coloring problem - who is correct?

In the diagram below Bob is going to color each of the lines either red or blue, in some manner he has in mind, which, however, we do not know.



Alice says: "When you do that, Bob, I think there will have to be either a red triangle or a blue triangle in the diagram."

Bob says: "I don't think so, Alice. I think I can see a way to color the lines red or blue without any triangles that are either red or blue."

Who is correct: Alice or Bob?