Cheapest triangulation

Given a simple polygon with \( n \) vertices, there is always at least one way to decompose it in triangles by adding \( n - 3 \) diagonals. For instance, these are three of the many triangulations of the same polygon:

Define the cost of a triangulation as the sum of the lengths of the diagonals that have been added. Given a \textit{convex} polygon, what is the cost of its cheapest triangulation?

**Input**

Input consists of several cases. Every case begins with \( n \). Follow \( n \) pairs of real numbers \( x \ y \) giving the coordinates of the points of the polygon, either in clockwise or in anticlockwise order. Assume \( 3 \leq n \leq 100 \).

**Output**

For every given polygon, print the cost of its cheapest triangulation with four digits after the decimal point. The input cases have no precision issues.

<table>
<thead>
<tr>
<th>Sample input</th>
<th>Sample output</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 0 0 1 1 0</td>
<td>0.0000</td>
</tr>
<tr>
<td>4 0 0 2 0 2 0 1</td>
<td>2.2361</td>
</tr>
<tr>
<td>5 -1.2 3 0 4 1 2.7 1 -1 0 -0.5</td>
<td>5.5730</td>
</tr>
</tbody>
</table>

**Problem information**

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