

PROBLEM 6.

An icosahedron is given. It is a regular polyhedron. Its sides are numbered from 1 through 20.

The icosahedron should be routed so that to reach each side only once.

The route cost  $C$  is defined by the scalar product:

$$C = \sum_{i=1}^{20} i \cdot f_i$$

where  $f_i$  is the number of the side which is reached in the  $i$ -th step.

One may pass from one side to another only if these sides are adjacent.

- A. Two sides will be adjacent if there exists a common edge;
- B. Two sides will be adjacent if there exists a common edge or a common point.

Find the routes with minimal costs for the cases given above.

Remark:

If for time or space complexity of the algorithm you may not find the exact solution you could propose a satisfactory one.