

Task №2
STATIC PLANE THERMAL CONDUCTIVITY PROBLEM

Individual tasks – plates in shape of letters.

Consider a plane stationary thermal conductivity problem for a plate in a shape of the given letter. Take the geometrical dimensions of the letter similar to those of the example problem. Note that the boundaries of the domain should contain both elliptical and arc (circumferential) segments. The bottom edges of the letter should be subjected to heating with prescribed temperature values and the top edges should be subjected to heat transfer. If possible, take advantage of symmetry when building the domain. Consider the plate to be made of any homogeneous isotropic material. The objective is to conduct thermal analysis and define the temperature and the heat flux vector distribution. Perform computations in ANSYS (command mode) and FlexPDE, and compare the results. In Ansys, estimate convergence of results (temperature and thermal flux) for different sizes of finite element mesh. Present a report.

Requirements to the report.

The report should contain the name of the student, the full description of the problem and the results obtained in ANSYS and in FlexPDE. Text of input files for ANSYS and FlexPDE should be also included in the report.

Provide the following computation results:

- finite element mesh with boundary conditions
- picture of the temperature distribution
- picture of the heat flux vector distribution
- picture of the distribution of the heat flux vector magnitude

Table 1. Suggestions for domain shape.

Variant No.	Domain shape	Student name
1	α	Губанов Александр Сергеевич
2	β	Догаев Никита Сергеевич
3	δ	Завялкин Денис Витальевич
4	ε	Катасонов Никита Андреевич
5	θ	Кириллова Елена Владимировна
6	ω	Крабченко Руслан Андреевич
7	λ	Лушпанов Андрей Александрович
8	μ	Непряхин Даниил Олегович
9	ρ	Петров Илья Сергеевич
10	σ	Половинкина Дарья Александровна
11	τ	Ражук Никита Викторович
12	φ	Ривкин Михаил Борисович
13	χ	Сенчукова Ангелина Александровна
14	ψ	Степанова Ирина Александровна
15	ϕ	Федоров Юрий Владимирович
16	Θ	Филоненко Никита Сергеевич
17	S	Шагал Анастасия Михайловна
18	D	Щукин Константин Вадимович
19	G	Kamps Jeroen