Faculty of Mathematics
Institute for Analysis and Numerical Mathematics
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Exercises to the classes
Numerical Methods in Sciences and Technics

Exercises no. 4
to 10.11.2003

The solution of exercise 2 is to submit in the exercise classes on Monday, 10.11.2003 !

Statements given in the lecture can be used in the solution of the exercises without proof. All other statements have to be proved.

1. Let the coarse grid matrix A^{2h} be defined by the Galerkin condition. Compute A^{2h} using the matrix representations of I_h^{2h}, A^h and I_{2h}^h.

2. Consider the fixed point equation (1.5.4) of the coarse grid correction scheme. Show that if u is the solution of $Au = f$, then u is the fixed point of (1.5.4).

3. Let B be a symmetric matrix. Show that $B(I - B)^n$, $n \in \mathbb{N}$, is also a symmetric matrix.