Homework No. 4

Determine the error estimate in energy norm by ZZ method. Compare the estimates with the correct error of the solution for discretization:

a) by one element with linear approximation functions

b) by two elements with linear approximation functions

Draw profiles of approximated and interpolated stresses. Determine the value of the energy norm for the exact solution, the relative error of the solution in energy norm, the estimate of relative error, and the efficiency index of estimation for both solutions.

Young's modulus E = 10GPa.

f=(3b) kN/m

E

L=(2a) m

X,U

a)

1   2

1

a

(1+c)dm

(1+c)dm

b)

1   2   3

1   2

a   a