ETH Lecture 401-0674-00L Numerical Methods for Partial Differential Equations

Numerical Methods for Partial Differential Equations

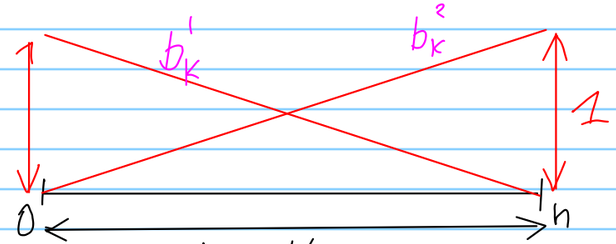
Prof. R. Hiptmair, SAM, ETH Zurich

Spring Term 2019

Q & A Session

April 1, 2019

Midterm 0-4:



$$b_k^1(x) = 1 - x/h$$
$$b_k^2(x) = x/h$$
$$\frac{db_k^1}{dx}(x) = -1/h$$
$$\frac{db_n^2}{dx}(x) = 1/h$$

$$= \int_0^h -1/h\,(1-x/h)\,dx = \int_0^h -1/h + x/h^2\,dx =$$

$$= -1 + 1/2 = -1/2$$

Trick: $b(\{x \mapsto 1\}, v) = 0$

Row sum = 0

$$\int_0^h 1/h\,(1-x/h)\,dx = 1/2$$

$$(A_K)_{ij} = a(b_h^j, b_h^i)$$

$$\int_0^h -1/h \cdot x/h\,dx = -1/2$$