



## Homework 2

### NUMA12: Numerical Approximation

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The purpose of this homework is to work with operator norms and interpolation.

You are to work in groups of two.

Hand in electronically a report latest on 16 February 2012 via the link on the course's webpage. Be prepared to present your results and your code in a short oral presentation to one of the course's teachers.

The assignment has 5 tasks. All of them are based on the course book. In case you don't have the book yet, you are welcome to come to one of the teachers to make copies of the relevant pages.

#### Task 1

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Solve Exercise 3.4 in Powell's book.

#### Task 2

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Solve Exercise 4.5 in Powell's book.

#### Task 3

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Solve Exercise 4.7 in Powell's book.

#### Task 4

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Implement Newton's interpolation method (Newton's tableau) to construct the interpolation polynomial of degree  $n$  when given  $n + 1$  data points. Try out your program for the data in Table 5.1 of Powell's book.

#### Task 5

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Modify your program to include Hermite interpolation and try it out with the function given in Exercise 5.5 in Powell's book.

Lycka till!