

# Engineering Analysis ENG 3420 Fall 2009

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Office hours: Tu-Th 11:00-12:00

# Lecture 25

- Attention: The last homework HW5 and the last project are due on Tuesday November 24!!
- Last time:
  - Cubic splines
- Today
  - Searching and sorting
  - Numerical integration (chapter 17)
- Next Time
  - Numerical integration of functions (chapter 18).

# Search algorithms

- Find an element of a set based upon some search criteria.
- Linear search:
  - Compare each element of the set with the “target”
  - Requires  $O(n)$  operations if the set of  $n$  elements is not sorted
- Binary search:
  - Can be done only when the list is sorted.
  - Requires  $O(\log(n))$  comparisons.
  - Algorithm:
    - Check the middle element.
    - If the middle element is equal to the sought value, then the position has been found;
    - Otherwise, the upper half or lower half is chosen for search based on whether the element is greater than or less than the middle element.