On Thursday 28/3, I am again away, so Dorthe Sølvason will take care of the lectures. We will start on numerical integration and look at the Newton-Cotes quadratures, i.e.

Extended midpoint rule Eq.(4.1.19)

Extended Trapezoidal rule Eq.(4.1.11)

Extended Simpson's rule Eq.(4.1.13).

She will then introduce Richardson extrapolation for estimating the order of a method based on a stepsize h and the related error on a numerical estimate. Notes will be handed out for this part.

With Ole, you will work on using the methods on four different examples where you compute the results, and use Richardson to estimate the order and the error on your results. Notice that the rectangle routine "Midpnt" on p. 168 uses alpha=3 rather than alpha=2. Hence, if you use that method, remember to take this into account when doing Richardson estimates. The reason for setting alpha=3 is to be able to reuse more f-computations. Anyway, I recommend that you also develop your own implementations of the methods.
