Task for lecture 9

- Consider the following integrals.

$$\int_0^1 \cos(x^2)e^{-x}dx \tag{1}$$

$$\int_0^1 \sqrt{x}\cos(x^2)e^{-x}dx \tag{2}$$

$$\int_0^1 \frac{1}{\sqrt{x}}\cos(x^2)e^{-x}dx \tag{3}$$

$$\int_0^1 1000 \cdot e^{\left(\frac{-1}{x}\right)} \cdot e^{\left(\frac{-1}{1-x}\right)}dx \tag{4}$$

- Approximate the integrals using DE rule.

- Apply Richardson Extrapolation.

Important Notes:

- Import quadrature.h before derule.h

- Note that derule also requires a "delta" value.

- Read page 175 in the book.

  - Figure out how to determine h_max.

  - Figure out what "delta" is.

  - Determine if a "delta" value is necessary to solve the given tasks