

I.4 Numerical integration (aka Quadrature)

Goal: Approx.

$$I(f) = \int_a^b f(x) dx$$

Idea: Use IP $p[f|\dots]$ to approx. $f(x)$ and integrate.
 Why is this easier? Integrating polynomials is easy.

Def.: a finite calculation rule to compute an approx. to $I(f)$

$$Q(f) = \sum_{j=0}^n w_j \cdot f(x_j)$$

is called quadrature rule (QR).

The $x_j \in I=[a, b]$ are called the quadrature nodes (QNs) and the w_j the quadrature weights (QWs).

QRs can now easily be derived...