

Introduction to Week Four

Elementary Integration Formulas

Composite Integration Formulas

✔ **Video:** Composite Quadrature Rules | Lecture 39  
12 min

✔ **Reading:** Simpson's 3/8 Rule  
10 min

▶ **Video:** Gaussian Quadrature | Lecture 40  
8 min

📖 **Reading:** Three-point Legendre-Gauss Quadrature  
10 min

▶ **Video:** Adaptive Quadrature | Lecture 41  
11 min

📖 **Reading:** Computing the Error in an Adaptive Quadrature  
10 min

Quadrature in MATLAB

Interpolation

Interpolation in MATLAB

Quiz

Programming Assignment: Bessel Function Zeros

# Simpson's 3/8 Rule

Simpson's  $3/8$  rule has elementary formula given by

$$\int_0^{3h} f(x) \, dx = \frac{3h}{8} (f(0) + 3f(h) + 3f(2h) + f(3h)).$$

Suppose that  $f(x)$  is known at the equally spaced points  $a = x_0, x_1, \dots, x_n = b$ , and  $n$  is a multiple of three. Let  $f_i = f(x_i)$  and  $h = x_{i+1} - x_i$ . Find the formula for the composite Simpson's  $3/8$  rule.

✔ **Completed**      **Go to next item**

👍 **Like**      💬 **Dislike**      🚩 **Report an issue**

