

Introduction to Week Four

Elementary Integration Formulas

- ✓

**Video:** Midpoint Rule | Lecture 36  
8 min
- ✓

**Reading:** The Midpoint Rule is the Area of a Rectangle  
5 min
- ✓

**Reading:** Midpoint Rule for a Quadratic Function  
10 min
- ✓

**Video:** Trapezoidal Rule | Lecture 37  
8 min
- ✓

**Reading:** Derive the Trapezoidal Rule  
10 min
- ▶

**Video:** Simpson's Rule | Lecture 38  
6 min
- 📖

**Reading:** Derive Simpson's Rule  
15 min

Composite Integration Formulas

Quadrature in MATLAB

Interpolation

Interpolation in MATLAB

Quiz

Programming Assignment: Bessel Function Zeros

# Derive the Trapezoidal Rule

Derive the trapezoidal rule by approximating  $f(x)$  by the straight line connecting the points  $(0, f(0))$  and  $(h, f(h))$ :

$$f(x) \approx f(0) + \frac{f(h) - f(0)}{h}x.$$

✓ Completed      Go to next item

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