

Introduction to Week Six

Numerical Solutions of PDEs

- ✓

**Video:** Boundary and Initial Value Problems | Lecture 60  
4 min
- ✓

**Practice Quiz:** Classify Partial Differential Equations  
6 questions
- ✓

**Video:** Central Difference Approximation | Lecture 61  
8 min
- ✓

**Reading:** Higher-order Central Difference Approximation  
10 min

Direct Solution of Boundary Value Problems

Iterative Solution of Boundary Value Problems

Time-stepping Methods for Initial Value Problems

Quiz

Programming Assignment: Two-dimensional Diffusion Equation

Farewell

# Higher-order Central Difference Approximation

Using Taylor series approximations for

$y(x + 2h), \quad y(x + h), \quad y(x - h), \quad y(x - 2h),$

derive a central difference approximation for the first derivative  $y'(x)$  that is accurate to  $O(h^4)$ .

✓ Completed

Go to next item

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