

# Computational Physics Laboratory report

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## 1 Error analysis

### 1.0.1 Approximating exponentials

#### Results

#### Remarks

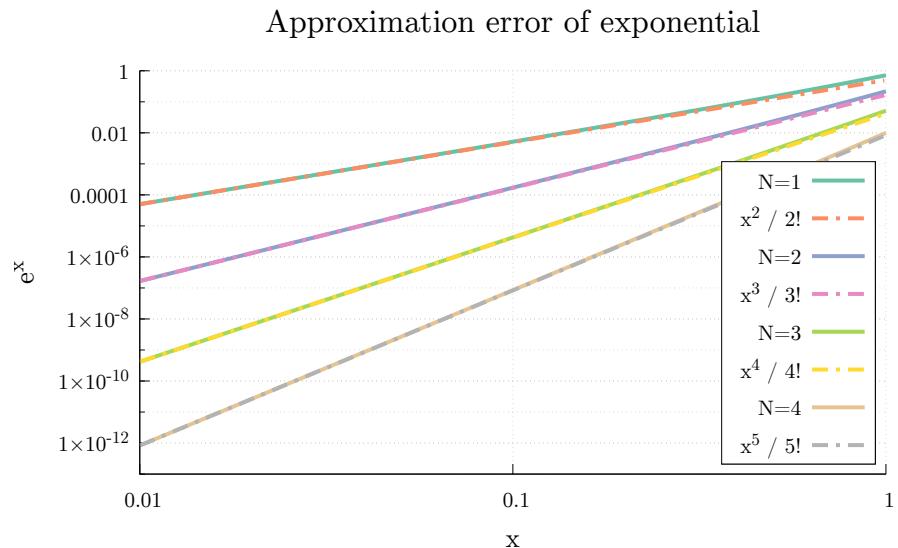


Figure 1: Caption describing the content of the figure.

## 1.2 Floating-point arithmetic and roundoff errors

### 1.2.1 Computing the Basel problem

## 1.3 Error propagation and condition number

### 1.3.1 Computing statistical momenta

### 1.3.2 Condition number: study of a simple algorithm

## 2 Linear systems

test text

### 2.1 Forward- and back-substitution

### 2.2 LUP Decomposition

This is test text

**2.3**

### **3 Interpolation**

### **4 Roots of nonlinear equations**

### **5 Numerical integration**

#### **5.1 Newton-Cotes formula**

##### **5.1.1 Trapezoidal rule**

test

##### **5.1.2 Simpson's rule**

test

#### **5.2 Free-nodes integration**

##### **5.2.1 Nodes and weights of Gauss-Legendre rule**

something

#### **Remarks**

##### **5.2.2 Integrals with Gauss-Legendre rule**

#### **5.3 Advanced topics in integration**

### **6 Ordinary differential equations**