

# Team Project Outline in LaTeX Template

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## Abstract

This is our abstract wooooo

## 1 Introduction

this is an introduction

## 2 Methods in this study

We will now describe each method that we used for this exploration.

### 2.1 Euler

Euler

### 2.2 Modified Euler

Modified Euler

### 2.3 Runge-Kutta

Rk2 and RK4 and Adaptive step stize RK4

### 2.4 Adams-Bashforth 4-Step Explicit

### 2.5 Predictor-Corrector Using Adams-Bashforth 4-Step Explicit and Adams-Moulton 3-Step Implicit

Regular and Adaptive step stize

## 3 Numerical experiments

Here, we'll describe each example and how each method compares in regard to their respective error.

### 3.1 Example 1

Example 1:  $y' = y - t^2 + 1$

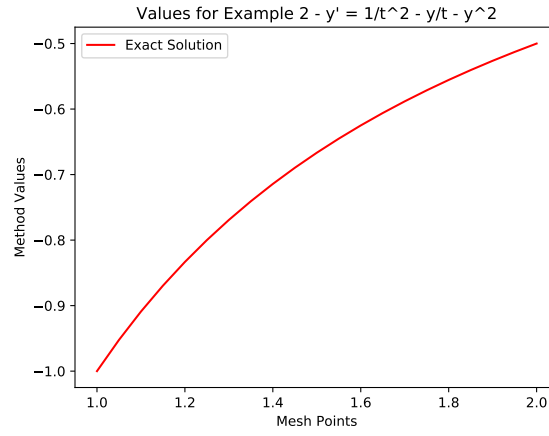


Figure 1: This is the exact solution to  $y(t) = \frac{-1}{t}$

### 3.2 Example 2

$$y' = \frac{1}{t^2} - \frac{y}{t} - y^2, t \in [1, 2], y(0) = -1, h = .05 \quad (1)$$

Exact solution:

$$y(t) = \frac{-1}{t} \quad (2)$$

### 3.3 Example 3

Example 3:  $z = dy/dt = e^2t * \sin(t) - 2y - dz/dx, dz/dt = e^2t * \sin(t) + z - 2y$

### 3.4 Example 4

Example4 :  $y' = y - t^2 + 1$