

**COMPARISON BETWEEN EULER METHOD, MODIFIED
EULER METHOD, AND RUNGE-KUTTA METHOD FOR
DIFFERENCE ORDER OF ORDINARY DIFFERENTIAL
EQUATION**

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ABSTRACT

Ordinary Differential Equations with Initial Value Problems (IVP) are commonly used in almost every section such as in Engineering, Physics, and Mathematics. The problems regarding Differential Equations have arisen a lot in our field area. This research focuses on finding the best method between the three methods which are Euler Method, Modified Euler Method, and Runge-Kutta Method to solve the Ordinary Differential Equation with IVP problems in a different order by reducing to the system of first-order. In this research, the differential equation with first-order, second-order, and third-order were used to determine the accuracy of the three methods. To determine the best method, all three methods' error is calculated and compared by choosing which method produces the fewest values of error. The comparison shows Modified Euler is the best method in solving Ordinary Differential Equation with difference order than Euler and Runge Kutta.

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