**Assignment 01: Numerical Methods (17/10/2021)**

**Paper Title:** Newton’s forward interpolation: representation of numerical data by a polynomial curve

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**What:** In the existing interpolation formula, the value of the dependent variable corresponding to each value of the independent variable is to be computed by using the formula, putting the value of independent variable in it. To interpolate the values of the dependent variable corresponding to a number of values of the independent variable using a suitable existing interpolation formula, for each value we have to compute the formula separately and thus we have to compute repeatedly. For solving this problem the authors established a formula from Newton’s forward interpolation formula.

**Why:** To reduce the numerical computations associated to the repeated application of the existing interpolation formula in computing a large number of interpolated values, the author has been derived a formula from Newton’s forward interpolation formula for representing the numerical data on a pair of variables by a polynomial curve.

**How:** By applying pairs of values of x and y (where x is equal distances) and algebraic expression on the Newton’s forward interpolation formula, a polynomial curve for a given set of numerical data on a pair of variables is established. The formula for representing a given set of numerical data on a pair of variables by a suitable polynomial the authors have aimed at.

**Limitation:**

1. The given values of the independent variable are at equal interval.
2. The value of the independent variable corresponding to which the value of the dependent variable is to be estimated lies in the first half of the series of the given values of the independent variable.

**Future Work:**

1. Establishing some formula for representing a set of numerical data on a pair of variables by a polynomial if the value of the independent variable corresponding to which the value of the dependent variable is to be estimated lies in the last half of the series of the given values, which are at equal interval, of the independent variable.
2. Establishing some formula for representing a set of numerical data on a pair of variables by a polynomial if the given values of the independent variable are not at equal interval.