

ABSTRACT

COMPLETION OF HOMOGEN LINEAR DIFFERENTIAL EQUALITY ORDE-2 BY USING POWER SERIES METHOD

By

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The differential equality is one of the part from mathematic who use to solve any problem in the science and technology sector. The equality of differential is an equal which related to one or more function with its derivative to one or more independent variable. The general form for differential equality orde-2 is :

$$y'' + p(x)y' + q(x)y = 0$$

In the solving of differential equality not all can clear as a numerik, but there have to solve with analytic method. To clear any problem by using analytic method, its can use the method named the power series method, and the basic form for the power series method is :

$$\sum_{n=0}^{\infty} a_n(x)^n = a_0 + a_1(x) + a_2(x)^2 + a_3(x)^3 + \dots$$

To solving any homogen differential equality orde-2 can use that power series method, there is :

$$y = \sum_{n=0}^{\infty} a_n x^n = a_0 + a_1 x + a_2 x^2 + a_3 x^3 + \dots$$

$$y' = \sum_{n=1}^{\infty} n a_n x^{n-1} = a_1 + 2a_2 x + 3a_3 x^2 + \dots$$

$$y'' = \sum_{n=2}^{\infty} n(n-1) a_n x^{n-2} \\ = \sum_{n=0}^{\infty} (n+2)(n+1) a_{n+2} x^n = 2a_2 + 3 \cdot 2a_3 x + 4 \cdot 3a_4 x^2 + \dots$$

Key word : differential equality, the power series method