

## PR 2: System of Linear Differential Equation - 2nd Homework

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**Preparation:** *Please learn the Non-homogeneous System of Linear Differential Equation at website: [korediantousman.staff.telkomuniversity.ac.id/PDA](http://korediantousman.staff.telkomuniversity.ac.id/PDA). You may work in a group consist of two or three students. The howework can be photographed and sent to the lecturer's WA number dosen (081294191520) before Saturday, 9 November 2019, 23.59 Indonesian Western Time. Please write down the name and student number for each member of the group*

### Question

Given the following non-homogeneous first order Linear Differential Equation:

$$\mathbf{X}' = \begin{bmatrix} 2 & 0 \\ 3 & 2 \end{bmatrix} \mathbf{X} + \begin{bmatrix} 1 \\ 2 \end{bmatrix}$$

with  $\mathbf{X}' = \begin{bmatrix} \frac{dx_1}{dt} \\ \frac{dx_2}{dt} \end{bmatrix}$  dan  $\mathbf{X} = \begin{bmatrix} x_1 \\ x_2 \end{bmatrix}$ .

- Determine the homogeneous solution of that System of Differential Equation (SDE)  $\mathbf{X}_H$  !
- Determine the particular solution of that SDE  $\mathbf{X}_P$ !
- Determine the total solution  $\mathbf{X}_T$  of that SDE!