Chapter 7

Today, we are going to discuss *non–homogeneous equations*. That is equations of the form:

The method of solution is very similar to what we have already done. We will analyze the system based on properties of the eigenvalues.

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Let $\boldsymbol{x}_1(t)$ and $\boldsymbol{x}_2(t)$ be solutions to the CHE:

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Find the general solution to:

$$\boldsymbol{x}'(t) = \begin{pmatrix} -2 & 1 \\ 1 & -2 \end{pmatrix} \boldsymbol{x}(t) + \begin{pmatrix} 2e^{-t} \\ 3t \end{pmatrix}.$$

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Find the solution to:

$$2x''(t) + 2x'(t) - 2x(t) = e^t.$$

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