Example. Consider the homogeneous, constant-coefficient system

\[ \mathbf{x}' = \begin{pmatrix} -1 & 2 \\ -2 & -1 \end{pmatrix} \mathbf{x} \]

(a) Find the general solution \( \mathbf{x}(t) \) of the system.
(b) Describe the behavior of the solution in the phase plane.
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