3. Consider the ODE
\[
\begin{align*}
\dot{x} &= y \\
\dot{y} &= -x
\end{align*}
\]
- Solve this ODE for arbitrary \(x(0), y(0)\) \hspace{1cm} \underline{analytically}\n- Find the constant of motion
- Plot a solution for a given \(x(0), y(0)\) \hspace{1cm} \underline{Plot the constant of motion for \(x(0), y(0)\) do they coincide?}
- Solve the ODE with the same \(x(0), y(0)\) \hspace{1cm} using \texttt{NDsolve} and compare with previous results.