Program for Time Series (TI-82)

This program graphs the solutions \( x(t) \) and \( y(t) \) of the system

\[
\begin{align*}
\frac{dx}{dt} &= f(x, y), \quad x(0) = x_0, \\
\frac{dy}{dt} &= g(x, y), \quad y(0) = y_0.
\end{align*}
\]

Notice that here we are graphing both \( x \) and \( y \) as functions of \( t \). Compare the Trajectory program on the previous page, which graphs the relation between \( x \) and \( y \), and in which \( t \) does not appear.

To run this program:
1. Enter the differential equation as \( Y_2 = f(X, Y) \) and \( Y_3 = g(X, Y) \).
2. Choose an appropriate WINDOW (note that \( X_{\min} \) and \( X_{\max} \) refer to the horizontal axis of the window, which is time in our case; \( Y_{\min} \) and \( Y_{\max} \) refer to the vertical axis: \( x \) and \( y \) in our case).
3. Run the program. To continue with other initial values, press CLEAR and ENTER. To quit, press CLEAR twice.