Program for Trajectories (TI-92)

This program plots trajectories of the differential equations

\[
\frac{dx}{dt} = f(x, y) \\
\frac{dy}{dt} = g(x, y)
\]

The functions \( f(x, y) \) and \( g(x, y) \) are input during the running of the program.

:traj()
:Pgm
:setMode(“Graph”, “FUNCTION”)
:PlotsOff
:ClrDraw
:ClrGraph
:ClrIO
:FnOff
:Local \( x, y, h, u, v \)
:Request “Enter \( f(x, y) = \)” , fden
:Request “Enter \( g(x, y) = \)” , fnum
:Input “Initial \( x = \)” , x
:Input “Initial \( y = \)” , y
:Input “Step size=” , h
:Text “Press ON to stop”
:Define \( f(x, y) = \) Func
:expr(fden)
:EndFunc
:Define \( g(x, y) = \) Func
:expr(fnum)
:EndFunc
:Lbl \( p \)
:u \rightarrow x
:v \rightarrow y
:Goto \( p \)
:EndPgm

To see the trajectories superimposed on the slope field, comment out the lines :ClrDraw and :ClrGraph from the traj() program by putting @ in front of them. (@ is found under the Control menu or by typing 2nd \( x \).) Run slope() followed by traj().