Euler’s Method (TI-92)

This program plots solutions to the differential equation

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

The function \( f(x, y) \) is input by the user during the running of the program.

```
:euler()
:Prgm
:setMode(“Graph", “FUNCTION")
:PlotsOff
:FnOff
:ClrDraw
:ClrGraph
:ClrIO
:Local x, y, h, u, v, p
:Request “Enter \( f(x, y) = \)”, ff
:Input “Initial \( x = \)”, x
:Input “Initial \( y = \)”, y
:Input “Stepsize =”, h
:Text “Press ON to stop”
:Define \( f(x, y) = \) Func
:expr(ff)
:EndFunc
:Lbl p
:x + h \rightarrow u
:y + h \times f(x, y) \rightarrow v
:Line x, y, u, v
:u \rightarrow x
:v \rightarrow y
:Goto p
:EndPrgm
```

To see the solution curves superimposed on the slope field, comment out the lines :ClrDraw and :ClrGraph by putting @ in front of them. (@ is found under the Control menu or by typing \texttt{2nd x}). Run slope() followed by euler().