

SLOPE FIELDS WITH THE TI-89/92/Voyage

Your TI-89 has the capability to draw slope fields. Follow the directions below to draw the slope field of the antiderivative of $f'(x) = 2x$.

- (i) Press the **MODE** key and select **DIFF EQUATIONS** for the Graph mode in the dialog box that appears.
- (ii) Display the **Y=** editor and move your cursor to the line $y1' =$. Enter $y1' = 2t$. Note: you use t instead of x as the independent variable in Differential Equations mode.
- (iii) Within the **Y=** editor type $\diamond|$. A **GRAPH FORMATS** dialog box should appear. Set:
Coordinates = **RECT**
Grid = **OFF**
Axes = **ON**
Leading Cursor = **OFF**
Labels = **OFF**
Solution Method = **RK**, and
Fields = **SLPFLD**
- (iv) Display the Window Editor and set:
 $t0 = 0$
 $tmax = 2$
 $tstep = .1$
 $tplot = 0$
 $xmin = -.2$
 $xmax = 2$
 $xscl = 1$
 $ymin = -2$
 $ymax = 2$
 $xscl = 1$
 $ncurves = 0$
 $diftol = .001$
 $fldres = 20$

- (iv) Display the Graph screen.

To draw the graphs of the antiderivatives that satisfy $f(0) = 0$ and $f(1) = 1$:

- (i) From the Graph screen that displays the slope field select **F8**.
- (ii) Move the cursor to the point $(0, 0)$ and press **ENTER**.
- (v) Select **F8**.
- (iv) Move the cursor to the point $(1, 1)$ and press **ENTER**.

You can also set the initial condition in the **Y=** editor. Just set $y11 = 0$ or $y11 = 1$, for example. Setting your initial value in this manner allows you to use the **TRACE** function on your function.