

## Fields of Slopes and Curve Families

One of the concepts which students find quite difficult to come to grips with is that of sketching a field of slopes from a derivative function and, from this, sketching a family of curves. An applet from *The HP HOME View* web site (at <http://www.hphomeview.com>), called "Slope Fields", will assist with this process.

In this applet the user enters the derivative function into F1(X) and then uses the VIEWS menu to produce a field of slopes. A cross-hair is projected onto the field which the user can move around. When the user presses ENTER, a curve is drawn, starting at that point and projecting to the right and then the left, and following the field of slopes. Repetition of this will illustrate the fact that there are a family of curves, separated by a constant, which all fit the 'description' of the function stored in F1(X).

The screen shots to the right are the result of  $F1(X)=X^2+1$

$\left(\frac{dy}{dx} = x^2 + 1\right)$ ,  $F1(X)=X^2*Y$   $\left(\frac{dy}{dx} = x^2 y\right)$  and  $F1(X)=(X+1)*Y$

$\left(\frac{dy}{dx} = (x+1)y\right)$  respectively.

