14. THE MEAN VALUE THEOREM

The following exercise may help reinforce the geometric interpretation of the Mean Value Theorem. I've never used this.

Given a "nice" function and an interval \([a, b]\), choose a viewing window which contains the interval and graph the function. Preferably, there should be pixels located at the points \((a, f(a))\) and \((b, f(b))\), (Section 3).

Now draw a line connecting \((a, f(a))\), \((b, f(b))\). This can be done using the **LINE** feature on the **GRAPH/DRAW** menu. Select **LINE**. Position the cursor on the point \((a, f(a))\) and press **ENTER**. Move the cursor to \((b, f(b))\) and press **ENTER**. The calculator draws the secant line connecting the two points.

Students are then supposed to "guess" a point on the curve at which the tangent line is parallel to the secant line. Move the cursor to the point and note the x-coordinate. Then use **GRAPH/DRAW/TanLn** to draw the tangent line to the point. The command is **TanLn**(y1,x). It is sufficient to enter the letter "x". The value of x is the x-coordinate of the last cursor position. Check analytically.