

Some Essential Features of a TI-83/84+ Calculator

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Conventions and language: calculator buttons will be typeset like `this`, menu titles will be typeset like “*this*”, menu items will be typeset like *this*, and user-input will be typeset like `this`. A string of consecutive actions/selections will be delimited by arrows (\rightarrow). The stuff entered on the left side of the screen is called “input” while the stuff displayed on the right side is called “output”. Note that every menu item is preceded by a number or letter that indicates a key-press that selects that item. E.g. `6: ZStandard` under the “Zoom” menu can be selected by pressing `6`.

Effective Input Entry and Home Screen Navigation

The most recent output is stored to a special variable called `Ans`. This `Ans` will pop up on the screen automatically if the first key you press with an empty input is an operator (e.g. `+`), but `Ans` can be accessed manually by pressing `2nd` \rightarrow `(-)`.

Running the ENTRY command by pressing `2nd` \rightarrow `ENTER` will place the previously run input back onto the input line. Repeatedly running the ENTRY command will cycle through the history of the previously run inputs.

The arrow keys can be used to move around the input that is currently being entered. Pressing `2nd` followed by a left- or right-arrow key will jump the cursor to the beginning or end of the input line. The `DEL` key will delete the thing under the cursor, called a *token*, while the `CLEAR` key will delete all tokens under and to the right of the cursor, *unless* the cursor is at the end of the line, in which case `CLEAR` will clear the entire input line. When editing a single input, the default behaviour is that pressing a key will replace the token currently under the cursor with the result of that key. To change this behavior to *insert* tokens to the left of the cursor instead, press `2nd` \rightarrow `DEL` to enter insert mode; while in insert mode the cursor will appear as an underscore instead of a block.

Storing Variables and Functions

Variables and functions can be stored in the calculator for easy access. Suppose a computation involves the force of gravity on earth. There’s no need to type 9.80665 more than once; that constant can be stored using the \rightarrow command to any of the alphabetic variables indicated to the top right of most keys on the calculator. For example entering 9.80665 then pressing

`STO` \rightarrow `ALPHA` \rightarrow `TAN` will store 9.80665 to the variable `G`, the letter located over the tangent key `TAN`. This constant can now be used in computations simply as `G` in the input line.

Similarly, entire functions can be stored in the calculator for easy use. Pressing the `Y=` button towards the top left of the calculator opens a screen where up to ten functions, `Y1` through `Y0`, can be entered. The novel thing is that these functions can be accessed from the home screen too. Suppose a computation requires us to evaluate the function f defined by the formula $f(x) = \sin(\cos(x))$ at $x = 8$. Instead of typing the formula for f into the home screen twice, simply enter that formula for `Y1`, and on the home screen press `VAR` \rightarrow “Y-VARS” \rightarrow *Function...* \rightarrow `Y1`, to place `Y1` on the home screen, then evaluate `Y1` at that input using the usual function evaluation notation, `Y1(8)`.

The value of any variables can be placed (recalled) onto the current input line with the `RCL` command. Press `2nd` \rightarrow `STO` \rightarrow followed by any letter variable accessed by pressing `ALPHA` or any other variable found under `VAR` to do so.

TI-BASIC Programming

TI-83/84+ calculator come equipped with a programming language called **TI-BASIC**. To create a new TI-BASIC program, press `PRGM`, navigate over to the “NEW” menu, and select *Create New*. First name the program. Having entered a name a Program Editor screen will display where the program will be written. That lonely colon `:` indicates the beginning of a line of code. If you exit the Program Editor screen you can return to it by pressing `PRGM`, navigating over to the “EDIT” menu, and selecting your program.

While inside the Program Editor, pressing `PRGM` again will display all the control-flow keywords under “CTL” and input/output keywords under “I/O” needed to write a program.

For the details on programming in TI-BASIC consult [a calculator’s guidebook](#) or find a tutorial elsewhere online.

Bonus: TI-30XIIS

This calculator can store variables. Given a number, pressing `STO` \rightarrow will bring up variables `A`, `B`, `C`, `D`, or `E`, into which can be stored that value. Then pressing `MEMVAR` will allow you to use that stored value.