



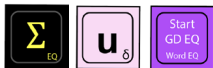
Calculus Keyboard

Operating Instructions

Most of the characters will display on the computer screen just as they appear on the key. Just push the key. It's that easy.


Special keys on the keyboard:

- ***Two options keys (examples):***



As you can see, on these keys there are two different options listed--one option is large font and the other

option is smaller font. A simple keypress will activate the large font option to display on the screen. To activate the smaller font option, first

press the 2nd key  and then press the desired key. Following that, it will then be reset to the original option. For example, if you press the key with **u** δ , you get u. If you press 2nd, then **u** δ , you get δ .

- **Start Google Docs EQ key:**



This key, featured in purple, only works in Google Docs on the first press and creates a shortcut to opening the equation editor. The 2nd option of this key will open the equation editor in Word or OneNote.

Once the Google Docs EQ button is pressed, after a slight pause, a box will appear on the screen with a flashing cursor inside. (Note: Google Docs must be in standard menu mode for this key to function correctly. This means that File, Edit, View, Insert, etc.

are visible on the menu bar). Once the Google Docs Equation Editor is activated, it allows the user to create:

- **Limits, Sums, and Integrals with spatial formatting:**



$$\lim_{x \rightarrow \infty} 5x^3 \quad \sum_{n=2}^8 7x \quad \int_2^6 x^2$$

In Google Docs Equation Editor: Press the 2nd key followed by the desired key. The symbol will appear with a flashing cursor below it. Enter a number, letter, or symbol then press enter. The cursor will move to the next position. Press enter again to enter additional characters. Press enter to exit the equation editor.

In Word/OneNote Equation Editor:

For limits, press “lim” key. Then on the main math keyboard, evoke the subscript EQ key by pressing 2nd, then subscript. If more than one digit is being typed to go below the limit, put the terms into parentheses. Then press space to see the formatting appear and this moves the cursor to the original line of typing. Enter the next term and press the arrow key to the right to advance out of that entry. Press enter to exit the equation editor.

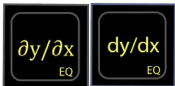
For Sums, press the 2nd key, then Σ . Then on the main math keyboard, evoke the subscript EQ key by pressing 2nd, then subscript. If more than one digit is being typed to go below the limit, put the terms into parentheses. To enter the term on top, press ^ and the term. Then press space to see the formatting appear and this moves the cursor to the original line of typing. Enter the next term and press the arrow key to the right to advance out of that entry. Press enter to exit the equation editor.

Note: The full enhanced formatting is better displayed when typing the equation on a new line rather than on the current line of typing. The equation will appear in the center of the line when it is in optimal form.

For integrals, press the \int or \oint key. Then on the main math keyboard, evoke the subscript EQ key by pressing 2^{nd} , then subscript. If more than one digit is being typed to go below the limit, put the terms into parentheses. To enter the term on top, press \wedge and the term. Then press space to see the formatting appear and this moves the cursor to the original line of typing. Enter the next term and press the arrow key to the right to advance out of that entry. Press enter to exit the equation editor.

Note: The full enhanced formatting is better displayed when typing the equation on a new line rather than on the current line of typing. The equation will appear in the center of the line when it is in optimal form.

- **Formatted Fractions**



$$\frac{\partial y}{\partial x} \quad \frac{dy}{dx}$$

In Google Docs Equation Editor, press 2nd key, then $\partial y/\partial x$ or dy/dx key. Press enter to leave the Equation Editor.

In Word/OneNote Equation Editor, press $\partial y/\partial x$ or dy/dx key. Press enter to leave the Equation Editor.

- **Vector Symbol**



$$\vec{u} \quad \vec{prt}$$

In Google Docs Equation Editor, press 2nd key, then \rightarrow key. The vector will elevate over the characters. Enter the desired characters below the vector. Press enter to

move out from under the vector symbol.
Press enter to leave the Equation Editor.

In Word/OneNote Equation Editor, first enter the characters to put beneath the vector. If more than one character, put them in parentheses. Next press, the 2nd key, then \rightarrow , then press spacebar. The vector will now be over the characters. Press enter to leave the Equation Editor.

- $\left| \begin{matrix} a \\ b \end{matrix} \right. GD EQ$ or $\left| \begin{matrix} \\ \end{matrix} \right. Tall$ line



$$\int f(x) \left| \begin{matrix} a \\ b \end{matrix} \right.$$

This denotes the limit of a function and typically written at the end of the function.

In Google Docs Equation Editor, press this key and a tall bar will appear with the cursor now below the line of text at the

lower limit. Type the value for the lower limit. Press Enter, and the cursor will go to the upper limit value. Type the upper limit value and press enter. Press enter again to leave the Equation Editor.

In Word/OneNote Equation Editor, Then on the main math keyboard, evoke the subscript EQ key by pressing 2^{nd} , then subscript. If more than one digit is being typed to go below the limit, put the terms into parentheses. To enter the term on top, press ^ and the term. Then press space to see the formatting appear and this moves the cursor to the original line of typing. Press enter to exit the equation editor.

In MathQuill websites such as ArithmeType, Desmos, DeltaMath, and more, press the 2^{nd} key, then the | key. To type the lower limit, on the main math keyboard evoke the subscript EQ key by pressing 2^{nd} , then subscript. Type the entry and press tab to move the cursor back to the baseline. Next, to type the upper limit on top, press ^ and

type the term. Then press tab and this moves the cursor to the original line of typing.

- ***Boldface Type:***



Pictured in pink, this turns on/off boldface in any document. As stated, this function only works in documents such as Google Docs, Word, OneNote, TextEdit, etc. This is useful for typed vector notation which is typically boldfaced.

- ***Boldface Unicode characters (example):***




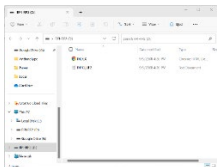
Boldface characters ***i***, ***j***, ***k***, ***u***, ***v*** are common vectors used in multivariable calculus. Again, these are most consistently displayed on a document but can often be used on websites, extensions, PDF editors, etc. It may be font specific, meaning it will

only display in certain fonts. We recommend using fonts such as Cambria Math, Times New Roman, Latin Modern, Asana Math, XITS Math.

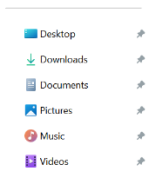
Code Update

Rarely, the code for the keyboard may need to be updated to conform with any changes that a particular OS may require. Perform the following steps below.

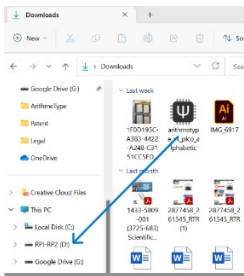
1. Put the keyboard into reset mode. Choose **one** of the two methods below.
 - a. Hold the top left key down (Start GD EQ)  while plugging the USB into your laptop. Keep holding the key a few seconds and then release. A chime may be heard. The keyboard is now in reset mode.
 - b. Hold down the Code Update button on the back of the keyboard while plugging in the keyboard. Keep holding the button a few seconds and then release. A chime may be heard. The keyboard is now in reset mode.
2. A new drive called RP1-RP2 will open.



3. Next, on the ArithmeType home page click the UPDATE button to download the new file.
4. Now open the files icon on your computer and find the downloads file. Double Click to open it.



5. The ArithmeType download will be displayed there. Drag and drop the file into the RP1-RP2 drive. A chime may be heard.



- The keyboard has now been updated. Be sure to reselect the correct OS on the back of the keyboard since its previous selection was erased during the reset.

Screen Readers

The ArthmeType Math Keyboard is most compatible with NVDA and JAWS. For optimal use, screen readers should be set to recognize Unicode characters. There will be variability in different screen reader's interpretation of the multikey commands, such as Start Google Docs EQ. This may instead be read at "e" since the command is alt, i, e. Please utilize Google Chrome for the best experience using screen readers with the ArthmeType Math Keyboard. See Reference table below for a verbal description of the keyboard. Any non-

spoken characters can be added using the software for the screen reader.

Reference Table for Keys (EQ=Equation Editor)

Start Google Docs EQ; Word EQ	Left angle bracket; union	Right angle bracket; intersection	Cross product; element of
Bold Capital F; bold capital G	Bold i; alpha	Bold j; beta	Bold k; gamma
Bold doc only	Bold u; delta	Bold v; nabla	Vector; EQ
Tall line limit superscript a over subscript b; Tall line only	Integral; EQ	Line integral; EQ	Surface integral; volume integral
lim; EQ	Cap sigma (sum); EQ	Partial derivative	Partial derivative y /partial derivative x; EQ
2 nd	Prime	dx	dy/dx; EQ

Troubleshooting

<p>Keyboard does not type</p>	<p>Wait 5-10 seconds and try typing again. If there is still no response, unplug and replug the USB into your computer. If using a MacBook, be sure to follow to follow the steps to help your computer identify the keyboard.</p>
<p>Special characters display as a series of strange number and symbols</p>	<p>Please turn the keyboard over and make sure you have selected the correct Operating System to match your computer. Mac OS users, please ensure you have used the Mac Installer download and followed the instructions to help recognize the keyboard and Unicode language.</p>
<p>Google Docs EQ button types a capital E and doesn't open the equation editor</p>	<p>Make sure you are in Google Docs and the menu options are displayed at the top of the screen (File, Edit, Insert, etc.).</p>

	<p>If you are in the Search Menu mode, click the top right corner down caret to switch to “Show the menus”. Also, Caps Lock must be off.</p>
<p>a/b appears as $\frac{a}{b}$ or $\frac{A}{B}$</p>	<p>This button only works in the Google Docs Equation Editor. Press the “Start Google Docs EQ” button first, then the a/b button to make fractions with a horizontal bar. Also, Caps Lock must be off.</p>
<p>Extra u in symbols</p>	<p>There is an update that needs to occur on the website programming to eliminate the extra “u”. Please contact us at info@arithmetype.com to help facilitate this update with the website.</p>
<p>Subscript not working</p>	<p>Please see the subscript key section to review which editors support this key. It is very useful but has limited editors that support its function.</p>

Superscript key ^ doesn't elevate character	Please review the ^ key section to learn the specific editors that support this key and how to use it correctly.
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