

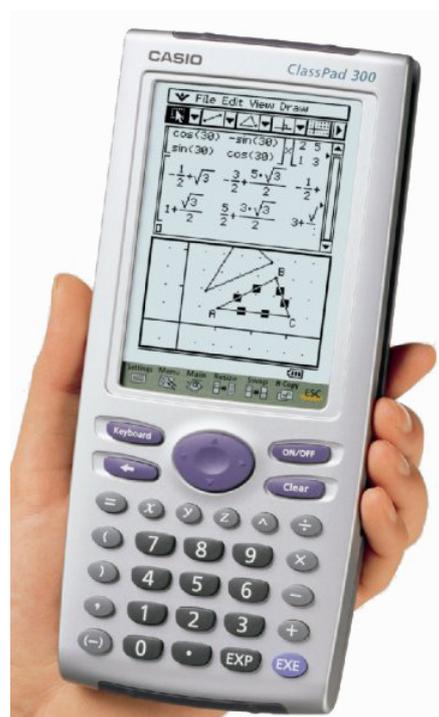
How do I get started on the ClassPad?

The first in the series of How do I books for the ClassPad.

Contents refers to Operating System 3.0 of the ClassPad.

Written by Elena Zema, based on introductory workshops as
presented by Anthony Harradine.

Work in progress, version 1.0



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WIP, Version 1.0, 1 April 2008.

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aharra@pac.edu.au

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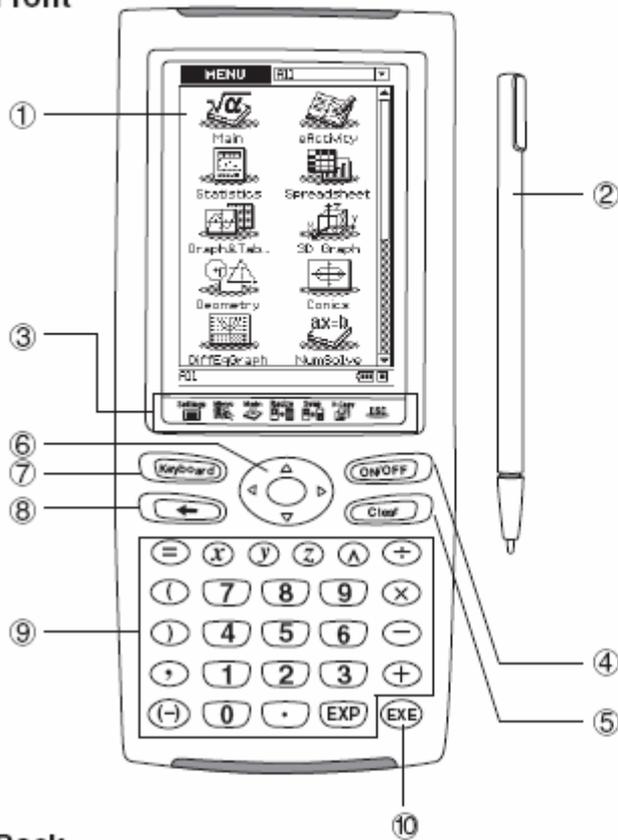
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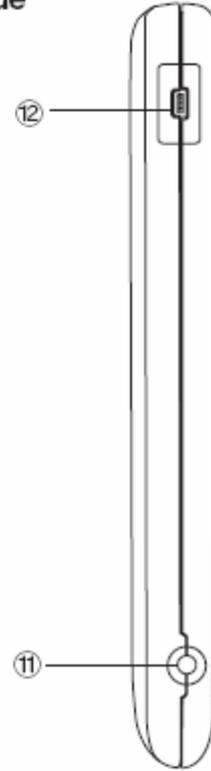
What's what...

Before we get started, let me introduce you to the ClassPad!

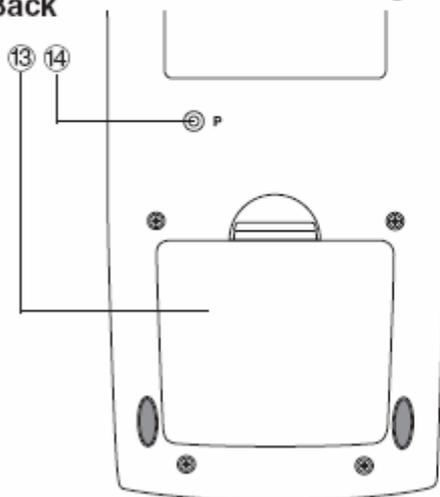
Front



Side



Back



The basic overview

Front

① Touch Screen

This is the view screen of the ClassPad. Use the supplied stylus to tap on the touch screen to input data, perform calculations and so on.

② Stylus

The stylus has been designed to perform various touch screen operations (by pressing the stylus against the touch screen).

③ Icon panel

The icon panel contains seven permanent icons. These applications can be executed by selecting an icon with the stylus.

④ key

Turns power to the ClassPad on and off.

⑤ key

This key clears all data in the current working line. This key can also be used to interrupt the processing of various operations.

⑥ Cursor Keys ()

These keys work in the same manner as computer cursor keys.

⑦ key

This key turns on and off the display of the soft keyboard.

⑧ key

This is the delete key. This key can also be used to pause the processing of various operations.

⑨ Keypad

This is the 'hard' keyboard.

⑩ key

The execute key.

Side

⑪ 3-pin data communication port

⑫ 4-pin mini USB port

Back

⑬ Battery compartment

⑭ P button

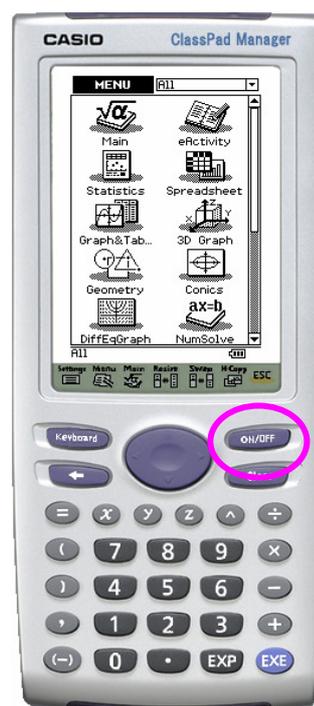
This is the reset button.

Section 1 - Pressing the ON button

Excited and scared all at the same time?
Take that cover off and let's get started...

Press the **ON/OFF** button.

If your ClassPad is brand new, it will run through a few initial setup procedures. Follow it's prompts.

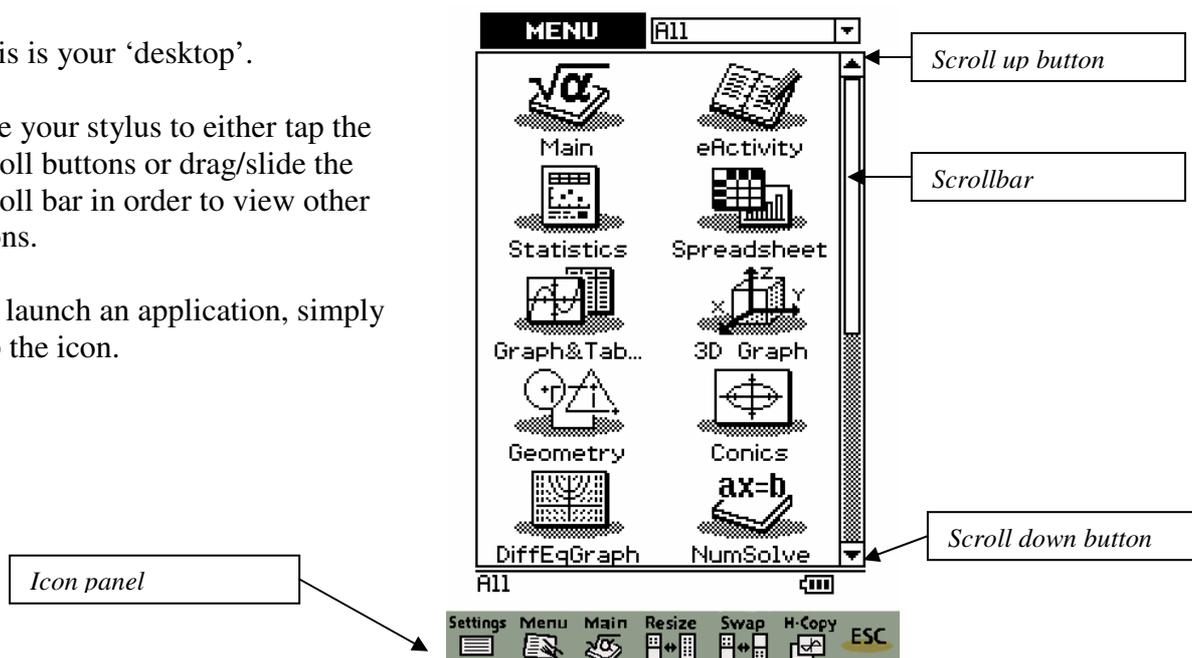


The Application Menu will now appear on the touch screen of the ClassPad.

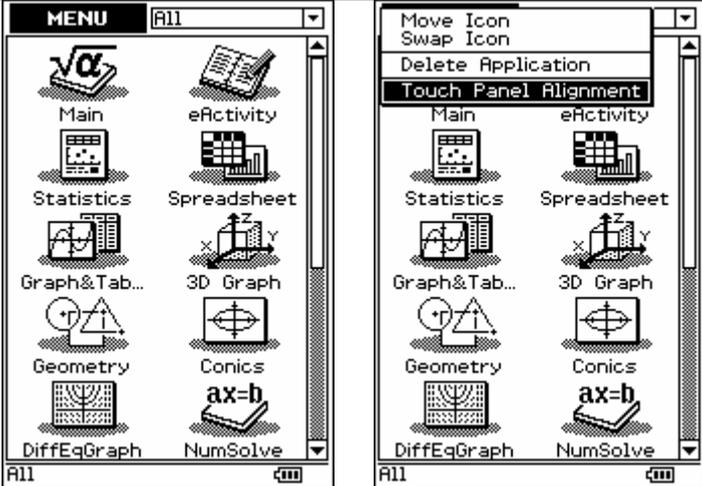
This is your 'desktop'.

Use your stylus to either tap the scroll buttons or drag/slide the scroll bar in order to view other icons.

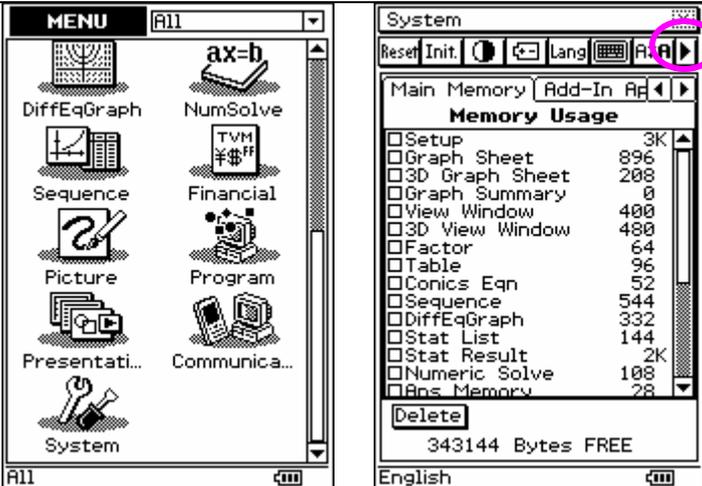
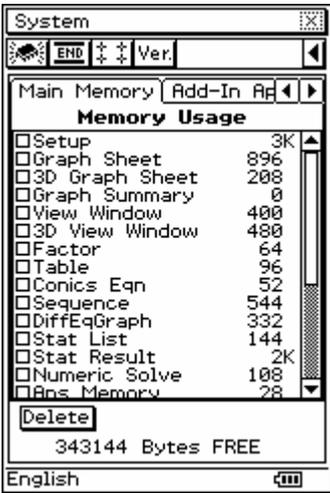
To launch an application, simply tap the icon.



If you are having problems using the stylus on the touch screen OR if you wear optical lenses/glasses, you should realign the touch screen.

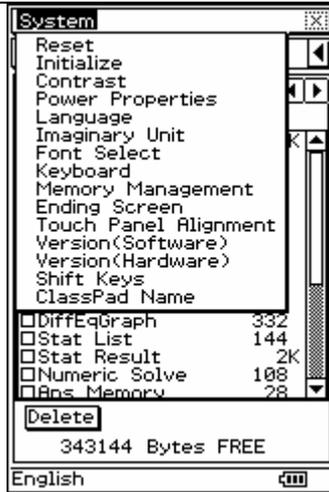
Instruction	Demonstration
<p>To realign the touch screen:</p> <p>Tap Menu then select Touch Panel Alignment.</p> <p>Use the stylus to touch the center of each cross on the screen.</p>	

The touch screen can also be realigned via the  application. Be very careful when utilising this application – one does not play here! This is where you can access (change and/or delete) the operating system of the ClassPad.

Instruction	Demonstration
<p>To realign the touch screen via the  application:</p> <p>Tap the  icon.</p> <p>Tap  on the tool bar to scroll and view other options.</p> <p>Tap  to align touch screen.</p>	
	 <p><i>FYI:</i> Be very careful when lending your ClassPad to others. They will find the  application and ‘change’ things... e.g. contrast, touch screen alignment, language etc.</p> <p>If this occurs, and you can not see the screen or the tapping is very misplaced, turn the ClassPad over and press the P button to reset.</p>

OR tap System to view the drop down menu.

Select Touch Panel Alignment.



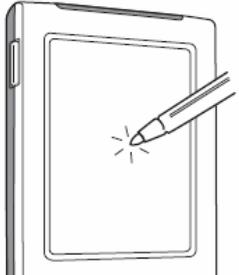
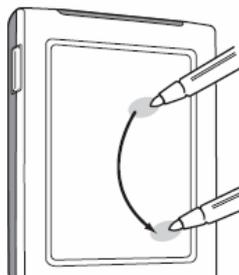
Using the stylus

Now before we continue, let's explain how the stylus works.

When you place the stylus onto the touch screen to execute an operation, it works as the stylus “comes off” the screen. (It works similar to a computer mouse – after the click!)

As you become more familiar with the ClassPad, you will discover whether you are a button “presser”, a stylus “tapper” or combination.

■ Things you can do with the stylus

Tap	<ul style="list-style-type: none">• This is equivalent to clicking with a mouse.• To perform a tap operation, tap lightly with the stylus on the ClassPad's touch screen.• Tapping is used to display a menu, execute an on-screen button operation, make a window active, etc.	
Drag	<ul style="list-style-type: none">• This is equivalent to dragging with a mouse.• To perform a drag operation, hold the tip of the stylus on the touch screen as you move the stylus to another location.• Dragging is used to change the setting of a slider or some other on-screen controller, to move a formula, etc.	

Section 2 - Using the Main Application

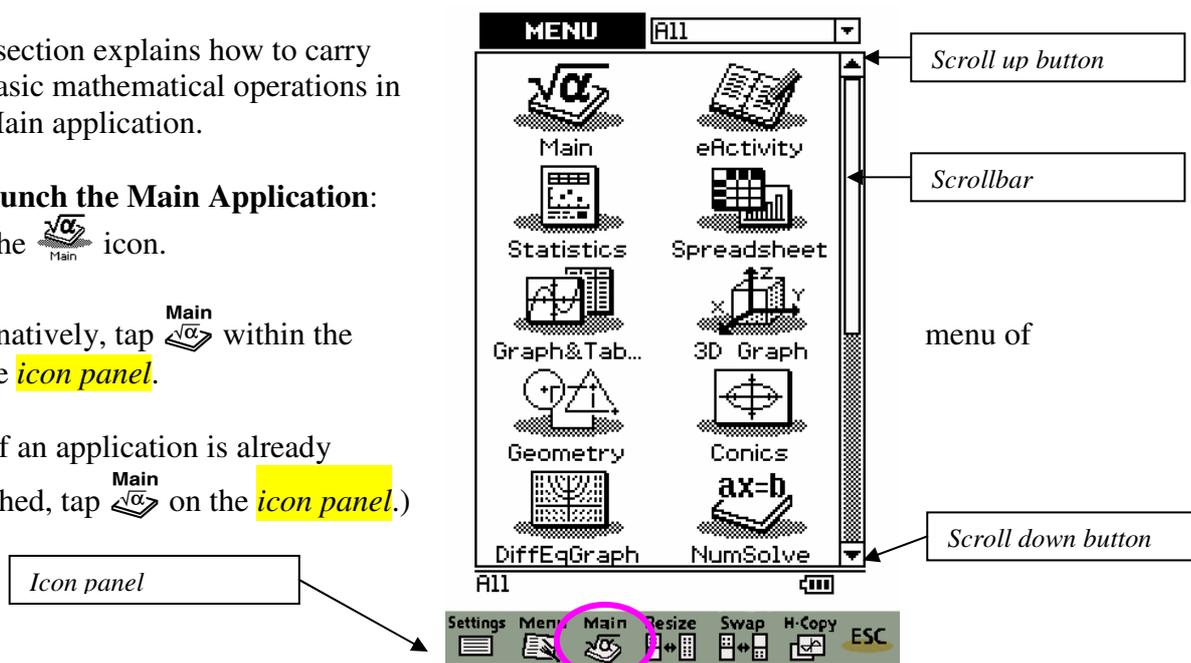
This section explains how to carry out basic mathematical operations in the Main application.

To launch the Main Application:

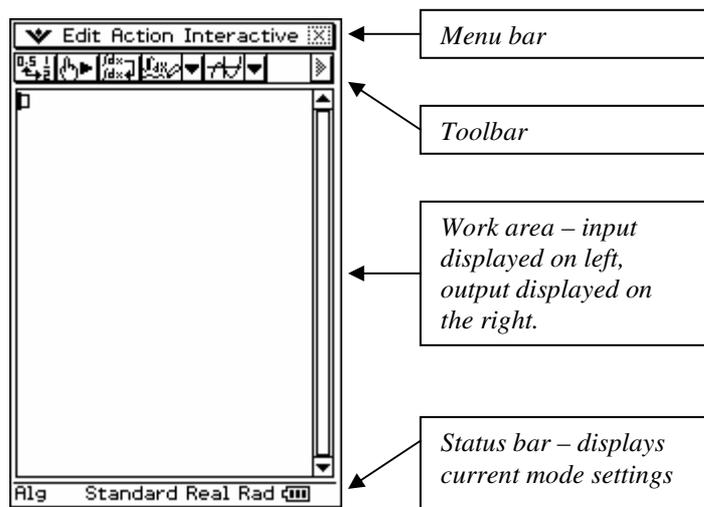
Tap the  icon.

Alternatively, tap  within the **icon panel**.

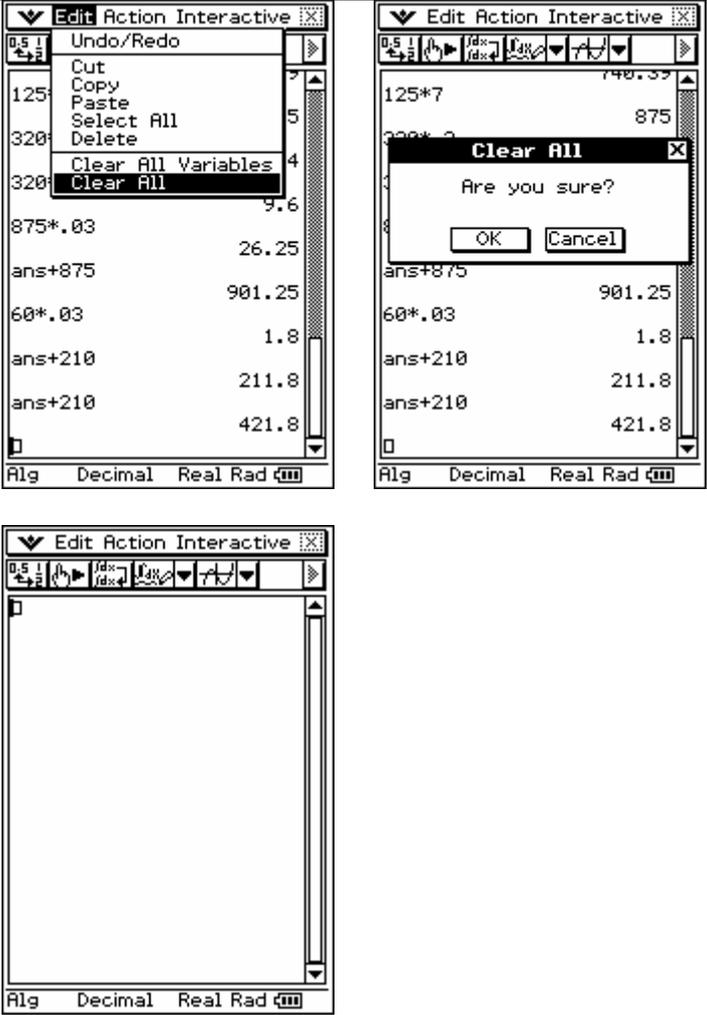
(Or, if an application is already launched, tap  on the **icon panel**.)



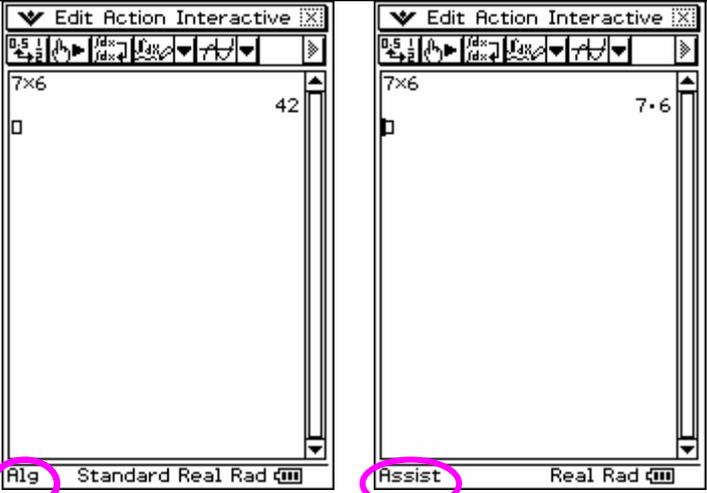
Once launched, the Main application window will be displayed as below:



Is the work area is filled with “working”?
Would you like to clear the work area?

Instruction	Demonstration
<p>To clear the work area:</p> <p>Tap Edit followed by Clear All.</p> <p>The Clear All dialogue box will appear. Tap OK.</p> <p>The calculation history will now be cleared from the work area.</p>	

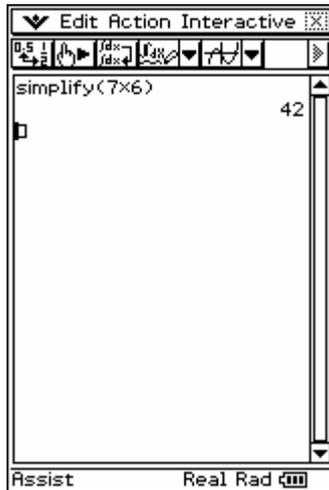
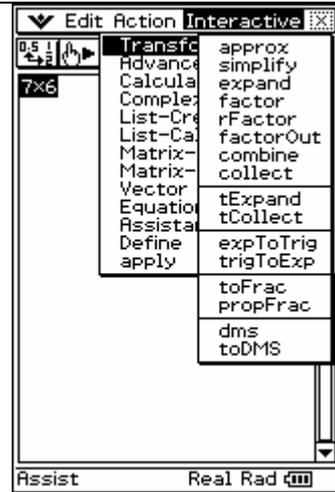
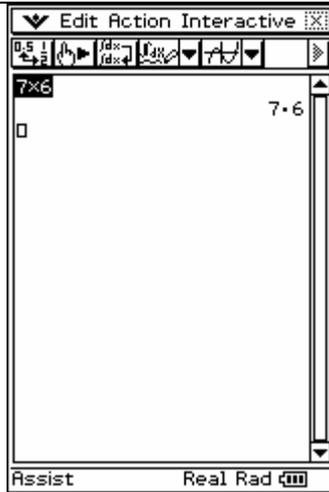
Let's try something:

Instruction	Demonstration
<p>Input: 7×6</p> <p>Press 7 × 6 then EXE.</p> <p>The output displayed will be dependent on the ClassPad settings.</p> <p>To check the current mode settings, look at the status bar.</p>	

Assist mode requires you to “command” (assist) the machine to perform a task.

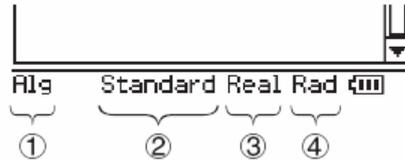
For this example:
Highlight the input. Tap **Interactive** (on the **menu bar**), select **Transformation**, then **simplify**.

The ClassPad, as commanded, will simplify the input.



To change the mode the calculator is operating in, you can simply tap on the specific mode name in the status bar to change it. Alternatively, tap  on the menu bar.

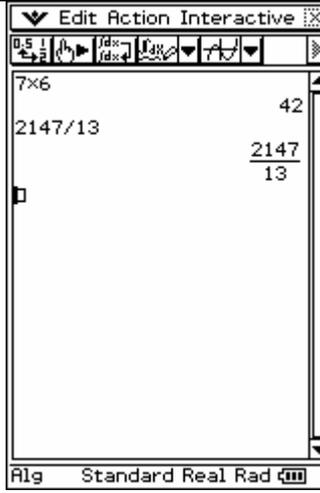
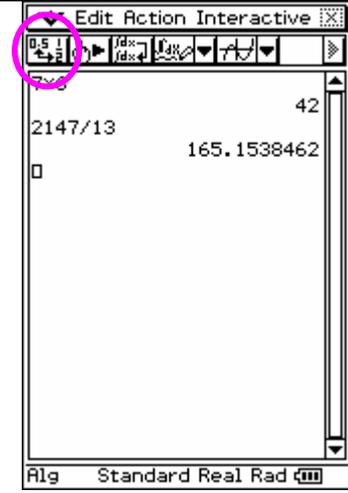
■ Status Bar Mode Indicators



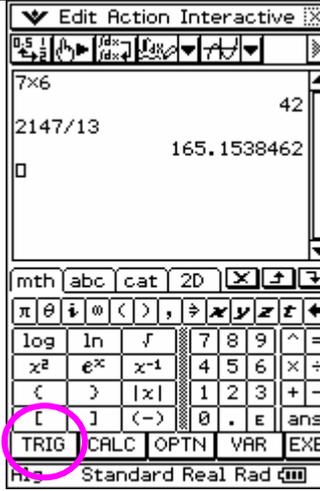
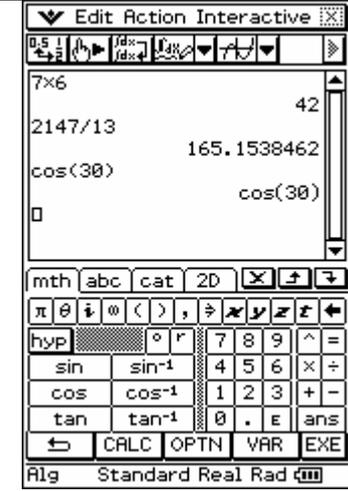
Settings that are marked with an asterisk (*) in the following tables are initial defaults.

Status Bar Location	Indicator	Description	Setting	Status
①	Assist	Assistant mode: Does not automatically simplify expressions.	Assistant	On
	Alg	Algebra mode: Automatically simplifies expressions.		Off*
②	Decimal	Decimal mode: Converts result to a decimal (approximate value).	Decimal Calculation	On
	Standard	Standard mode: Displays result in exact form (fractional format). If a result cannot be displayed in exact form, however, it will be displayed as a decimal approximation.		Off*
③	Cplx	Complex mode: For complex number calculations.	Complex Format	On
	Real	Real mode: For real number calculations.		Off*
④	Rad	Radian mode: Angles displayed in radians.	Angle	Radian*
	Deg	Degree mode: Angles displayed in degrees.		Degree
	Gra	Grad mode: Angles displayed in grads.		Grad

Let's try something:

Instruction	Demonstration	
<p>Input: 2147 ÷ 13</p> <p>The output displayed will be dependent on the ClassPad settings. (In this instance, it is in Standard mode.)</p> <p>To switch between outputs from exact values to decimal approximations, put the cursor in either the input or output line and tap  (located on the tool bar).</p>		

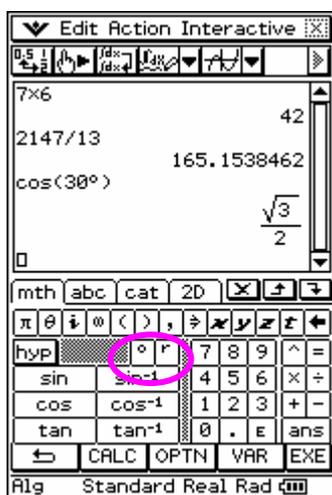
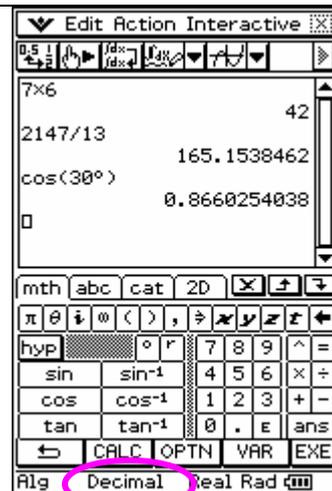
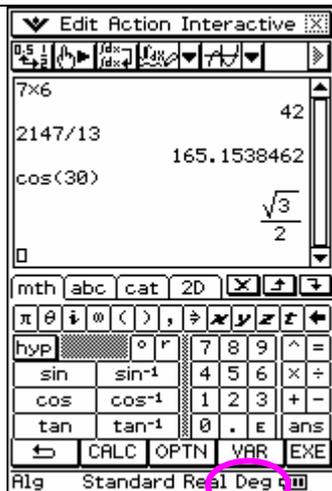
Let's try something:

Instruction	Demonstration	
<p>Input: Cosine 30°</p> <p><i>So where is the cosine button?</i></p> <p>Tap Keyboard.</p> <p>This key turns on (and off) the display of the soft keyboard.</p> <p>Using the math options on the soft keyboard, select the TRIG tab, and tap cos.</p> <p>Enter the angle and tap OK.</p> <p>The output displayed will be dependent on the ClassPad settings. (In this instance, it is in Standard mode.)</p> <p>To switch between outputs from exact values to decimal approximations, put the cursor in either the input or output line and tap  (located on the tool bar).</p> <p><i>Do you need the answer in degrees and a decimal approximation?</i></p>		
		

Tap in the working line, then tap the **status bar** and change Rad to Deg and press **(EXE)**.

Tap in the working line, then tap the **status bar** and change Standard to Decimal.

Note: it is good practice to include the degree (or radian) symbol. The symbol input will over ride the mode the ClassPad in working in and you will get the answer you need.



Note:
It is in this situation that the inclusion of the degree symbol is critical. It tells the ClassPad your input is in degrees. Without this, it would assume the input is in radians as the ClassPad is set to radian mode.

Have a go!

Try a few different angles using different modes.

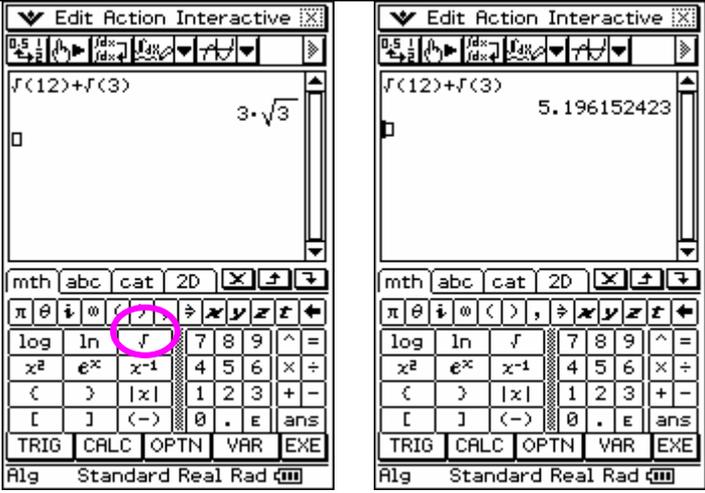


A little bit of brain enrichment!

Do you know what a gradian is?

Gradian (also known as a gon or grade) is a form of angular measure. The angle of a circle is 400 gradians. Therefore, a right angle is 100 gradians.

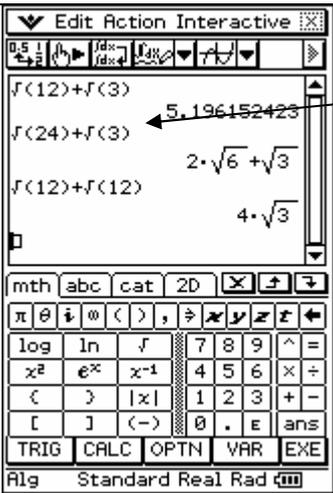
Let's try something:

Instruction	Demonstration
<p>Input: $\sqrt{12} + \sqrt{3}$</p> <p>Using the math options on the soft keyboard to view the $\sqrt{\quad}$ symbol.</p> <p>The output displayed will be dependent on the ClassPad settings. (In this instance, it is in Standard mode.)</p> <p>To switch between outputs from exact values to decimal approximations, put the cursor in either the input or output line and tap $\frac{0.5}{\downarrow \uparrow 2}$ (located on the tool bar).</p>	

The difference between **Standard mode**, **Decimal mode** and the $\frac{0.5}{\downarrow \uparrow 2}$ icon.

When you use the $\frac{0.5}{\downarrow \uparrow 2}$ icon (located on the **tool bar**), it is a **local** change between exact values and decimal approximations.

When you change the mode from **Standard** to **Decimal** (located on the **status bar**), it is a **global** change between exact values and decimal approximations.

	Demonstration
<p>Note: The output will change from working line onwards when changing mode from Standard to Decimal (and vice versa) mode.)</p>	 <div data-bbox="1029 1384 1364 1841" style="border: 1px solid black; padding: 5px;"> <p>In this instance, the mode was changed from Decimal to Standard here. The cursor was placed in this working line, then tap the status bar to change the mode to Standard. Press EXE.</p> </div>

The basics about variables

You will notice on the hard keypad the keys \mathbf{x} \mathbf{y} \mathbf{z} . When pressed they input a bold italic letter.

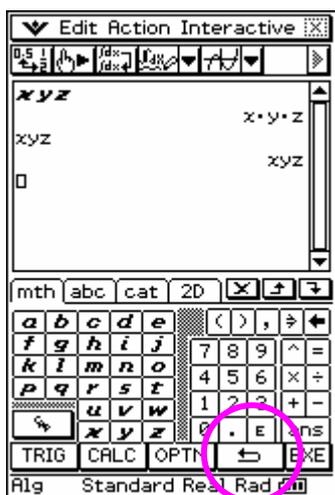
You can also input letters using the \mathbf{abc} panel on the soft keyboard. Note that when doing this the letters are not bold and italic. Note the outputs. The ClassPad understands \mathbf{xyz} to be $x \times y \times z$, thus removing the need to enter multiplication signs all the time.

ClassPad understands \mathbf{xyz} to be the name of some other variable. If we wanted to, we could enter $\mathbf{x} \times \mathbf{y} \times \mathbf{z}$ – your choice, but it is easy to forget them sometimes!



This feature helps us to enter algebraic expressions as we see and write then, provided we use the **bold and italic** letters.

We are not restricted to just \mathbf{x} \mathbf{y} \mathbf{z} . On the \mathbf{mth} and $\mathbf{2D}$ palettes of the soft keyboard the option \mathbf{VAR} holds 52 variables for you to use.

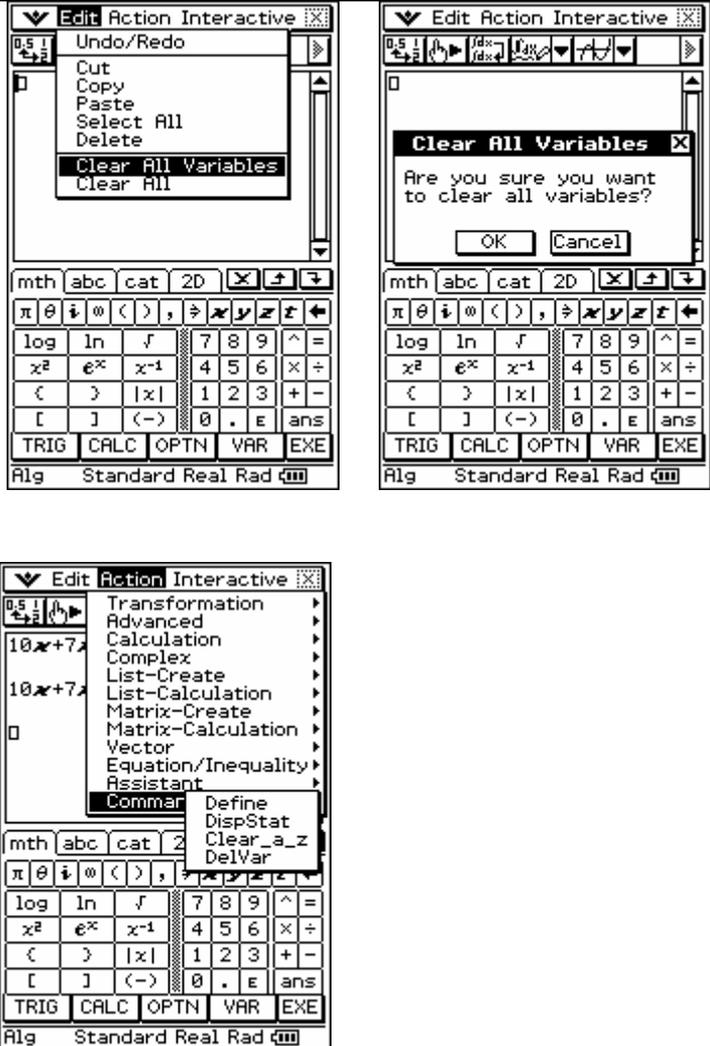


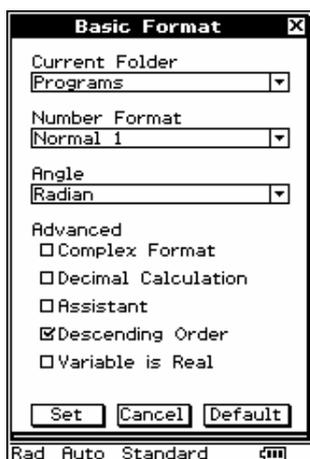
Note: It is possible to define a variable to be a numeric value. If this has occurred, it can be annoying when trying to perform symbolic computation. To be sure the variables \mathbf{a} to \mathbf{z} are not defined to be some numeric value, use the **Clear All Variables** command in the **Edit** menu.

In this screen capture, you can see that \mathbf{x} has been assigned the value of 2.



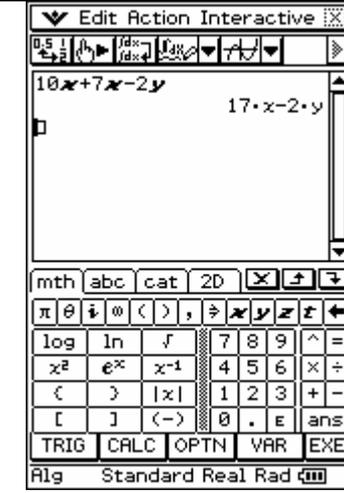
Must do!:

Instruction	Demonstration
<p>Before attempting the following example, it is a good idea to Clear All Variables (especially if someone else has been using the ClassPad).</p> <p>Select Edit from the menu bar then tap Clear All Variables. The Clear All Variables dialogue box will appear. Tap OK.</p> <p>You can also use Action from the menu bar. Clear_a_z – clears all lower case variables only. DelVar – deletes specific variables. (e.g. DelVar x)</p>	

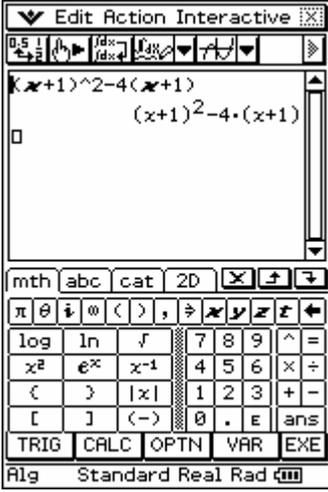
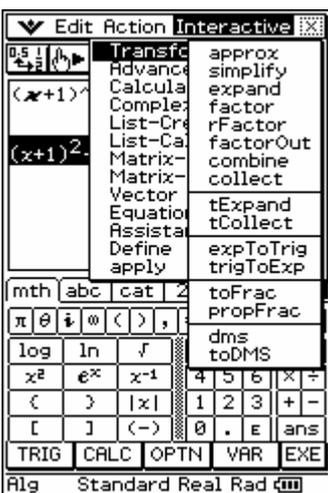


To achieve answers in the same format as those displayed in the following examples; go to **Settings** and select **Basic Format**. Under the **Advanced** options, tick **Descending Order**. Tap **Set**.

Let's try something:

Instruction	Demonstration	
<p>Input: $10x + 7x - 2y$</p> <p>Press (EXE).</p>		

Let's try something:

Instruction	Demonstration	
<p>Factorise $(x+1)^2 - 4(x+1)$</p> <p>Enter the function and press (EXE).</p> <p><i>Did you expect a simplified result (or expanded result)?</i></p> <p>Well ClassPad knows many different things could be done to the output. Therefore, you must “command” it to factor (or expand).</p> <p>Swipe the output to highlight and “drag and drop” into the next working line.</p> <p>Highlight the input. Tap Interactive (on the menu bar), select Transformation, then factor.</p>	 	

This is where we begin to learn the preferred way to “command” the ClassPad:

1. Enter a mathematical object
2. Highlight (select/swipe) object (working form right to left)
3. Tap **Interactive** on the **menu bar**.
4. Choose what you want to do. (A dialogue box (Wizzie) will then more than likely appear to assist you.)

Have a go:

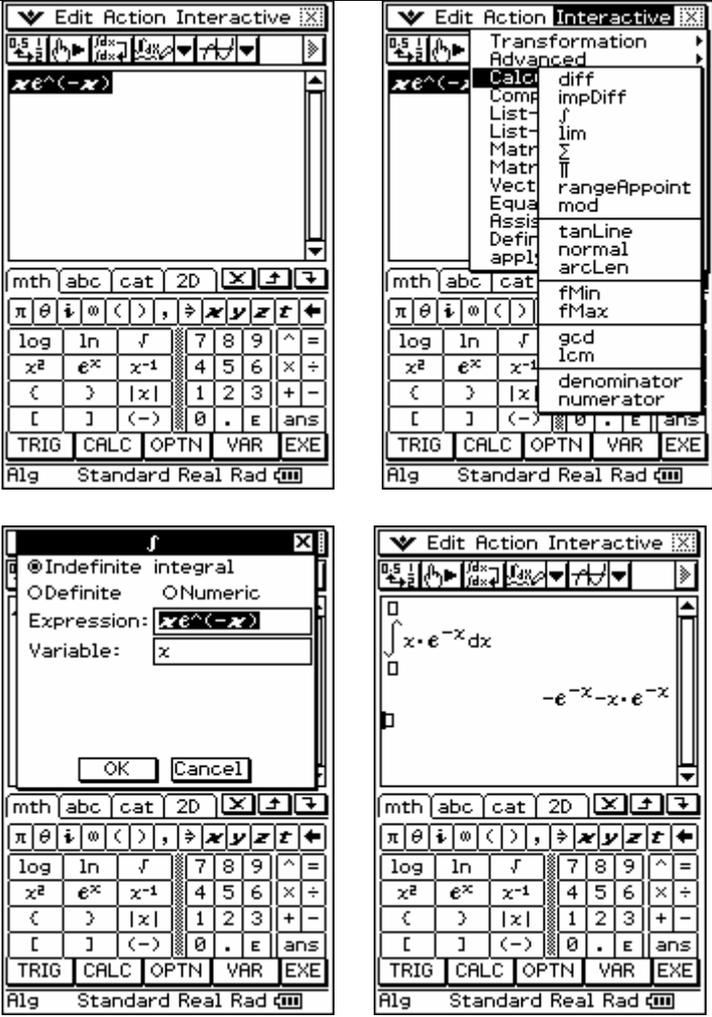
Your turn to solve something!

On a piece of paper, solve the following:

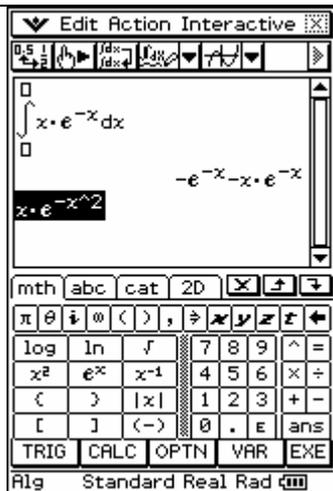
$$\int xe^{-x} dx \quad \text{How long did that take? Is it correct?}$$

The **Interactive** menu acts like a *wizard* so you do not have to remember what information the ClassPad needs, it tells you what it needs.

Let's try something:

Instruction	Demonstration
<p>Solve:</p> <p>a) $\int xe^{-x} dx$</p> <p>b) $\int xe^{-x^2} dx$</p> <p><i>Method 1: Linear entry</i></p> <p>Key in and highlight the function.</p> <p>Tap Interactive, then Calculation, followed by \int (the integral sign).</p> <p>Select Indefinite integral. Enter the variable you are integrating with respect to into the variable box. Tap OK.</p> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>When working with indefinite integrals, don't forget you will need to include the constant of integration, c, when writing down your answer.</p> </div>	

To solve equation b):
 Highlight equation a), “drag and drop” (or copy and paste) into the next working line and edit.
 Follow the same process as above to integrate.



The 2-D palette.

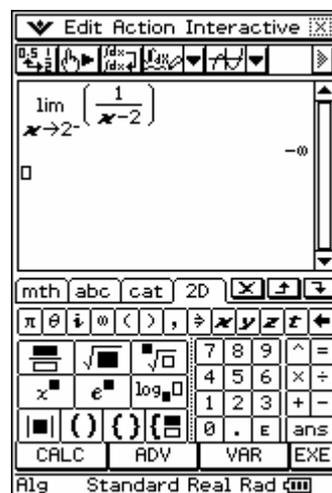
The 2-D palette allows you to enter a lot of the mathematics you deal with as you see it in books and write it on paper.

Raise the soft **Keyboard** and tap the **2D** tab. This reveals 2-D palette. (Tap **CALC** and **ADV** to reveal other options.) We can achieve that seen opposite.

Not all processes can be entered in this way.

So, you are able to choose the way you want to work. The

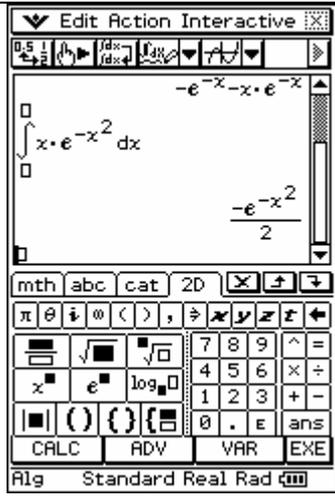
2D palette removes the need for excessive bracket entry, which has always been a difficulty with electronic technology.



Let's try something:

Instruction	Demonstration	
Solve: a) $\int x e^{-x} dx$ b) $\int x e^{-x^2} dx$ <i>Method 2: 2D entry</i> Key in the function, using the integral feature, \int , on the 2D soft keyboard (choose the CALC option). Press (EXE) . <i>Note:</i> Do not enter lower & upper terminals for indefinite integrals. To solve equation b):		

Highlight equation a), “drag and drop” (or copy and paste) into the next working line and edit. Press **(EXE)**.
OR
Just edit equation a).



When working with indefinite integrals, don't forget you will need to include the **constant of integration, c**, when writing down your answer.

The following offers an alternative approach to “command” the ClassPad.

Catalogue and Action menu

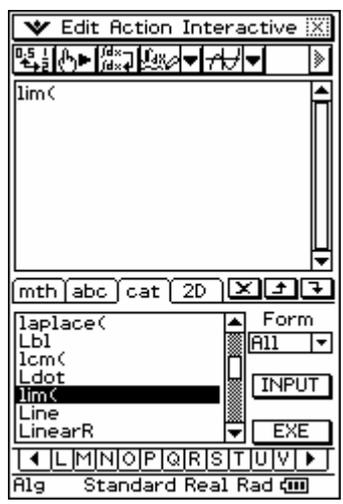
Catalogue and Action menu.

The ClassPad was made to enable the user to enter mathematics as we write it on paper (natural input) and conduct mathematical processes without the use of syntax.

Every command the ClassPad possess resides in the

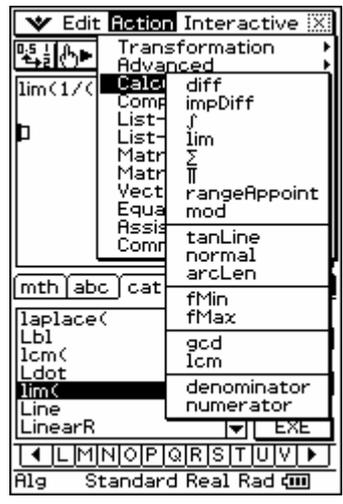
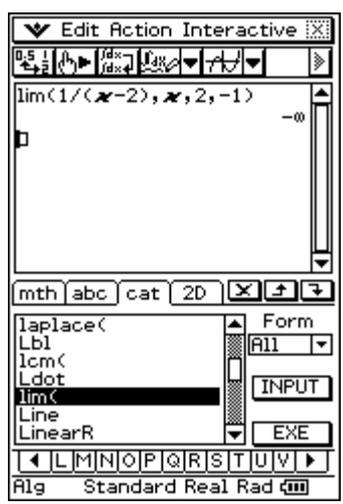


catalogue. Launch the **Main** application, raise the soft keyboard and tap the **[cat]** catalogue tab. Set the form to be all. Locate the **lim(** command.



Suppose we want to determine the $\lim_{x \rightarrow 2^-} \left(\frac{1}{x-2} \right)$. We

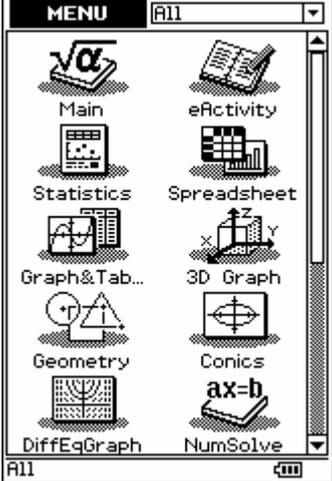
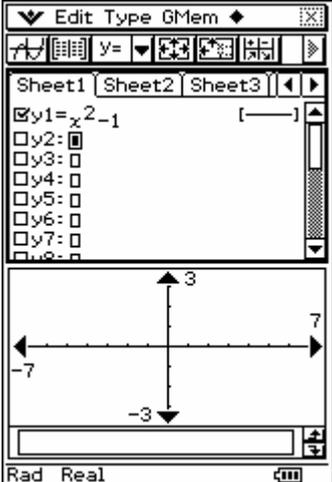
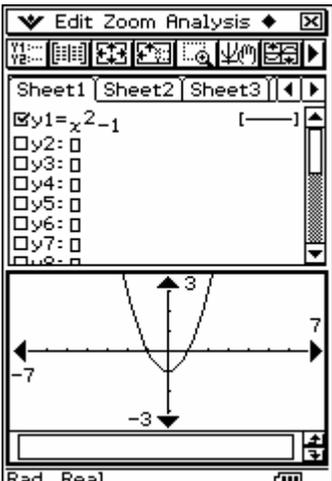
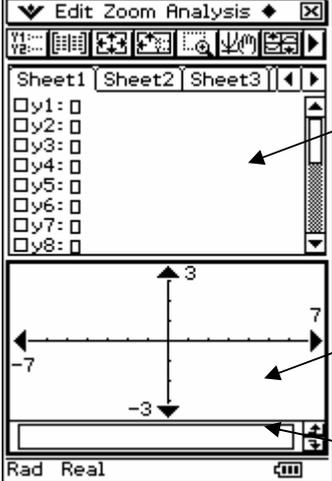
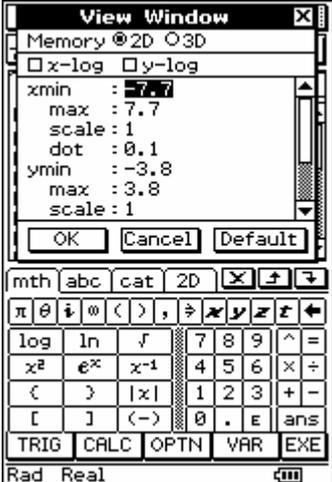
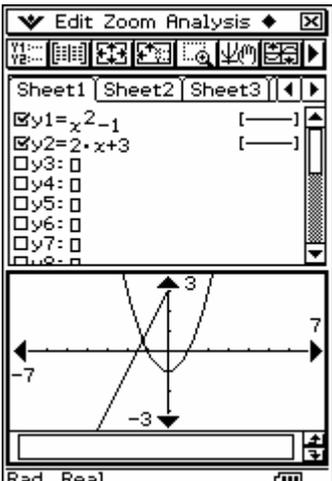
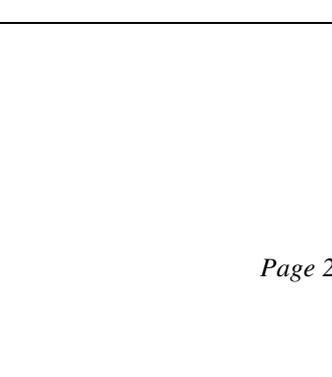
would now have to remember what the syntax for this command is: **lim(function, variable, variable value, limit direction)**. So, if you like syntax, you can use the ClassPad in this way.



A shortcut to the catalogue, if you like this way of operating, is the **Action** menu. It contains many of the most commonly used command from the catalogue.

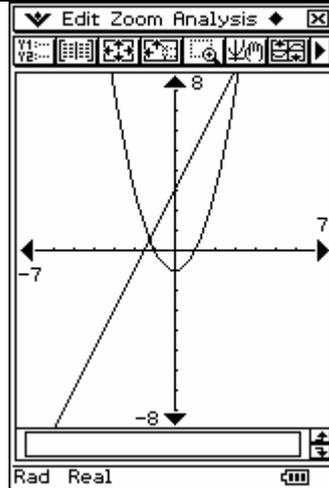
Section 3 – Using the Graph & Table Application

Let's try something:

Instruction	Demonstration
<p>Plot the following:</p> <p>a) $y = x^2 - 1$</p> <p>b) $y = 2x + 3$</p> <ol style="list-style-type: none"> Tap  on the icon panel. Open the  application. Tap in the working line of y_1 (or an empty line). Define y_1 to be $x^2 - 1$. Press EXE to complete the process. Notice the box in front of the function is now ticked. Check your graph view window settings by tapping  located on the tool bar. If necessary, change your window settings, then tap OK. Tap  to have a graph of the function appear. (Note that the menu bar, tool bar options and status bar change when the graph window is active). Next define y_2 to be $2x + 3$ and plot. <div data-bbox="256 1581 576 1839" style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>Alternatively, highlight the function in the graph editor window and drag it into the graph window to have the graph of the function appear.</p> </div>	       <p>The demonstration shows the following steps:</p> <ol style="list-style-type: none"> The application menu is shown with options like Main, eActivity, Statistics, Spreadsheet, Graph&Tab..., 3D Graph, Geometry, Conics, DiffEqGraph, and NumSolve. The Graph Editor window is shown with $y_1 = x^2 - 1$ selected. The tool bar and status bar are visible. The Graph view window is shown with the graph of $y_1 = x^2 - 1$ plotted. The window settings are shown in the View Window dialog box. The Graph Editor window is shown with $y_1 = x^2 - 1$ and $y_2 = 2x + 3$ selected. The Graph view window is shown with the graphs of $y_1 = x^2 - 1$ and $y_2 = 2x + 3$ plotted. <p>Labels in the diagram point to the Graph Editor window, Graph view window, and Message box.</p>

Resize

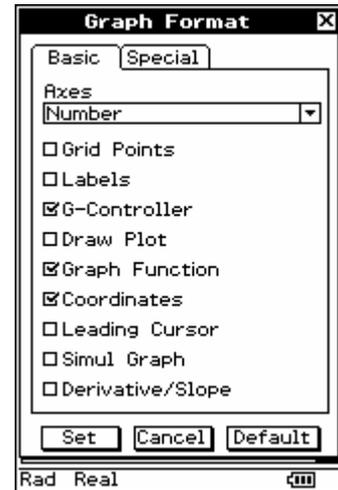
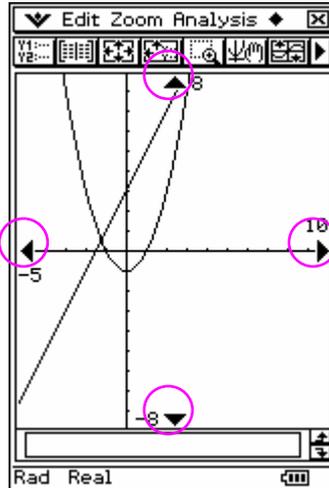
By tapping  on the **icon panel**, the entire touch screen can be used to the see graph view window.



Graph Controller Arrows

Once a graph has been sketched, it can be scrolled left, right, up or down using the **cursor key** or the **graph controller arrows**.

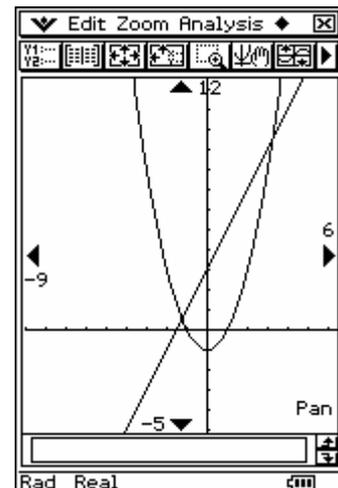
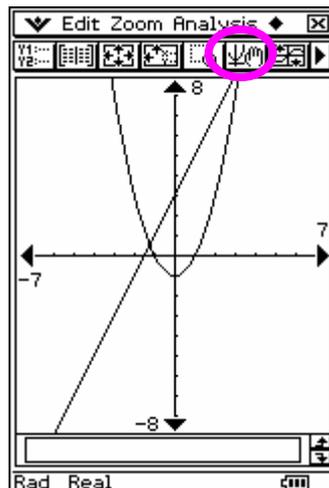
Note: The graph controller arrows will only be **active** if the **Graph Format** settings are set with the **G-Controller** box ticked. (Tap  then **Graph Format**)



Panning the graph view window

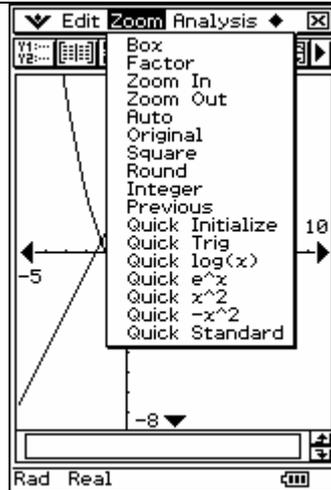
To operate this function, the **graph view window** needs to be **active** in order to use the appropriate **tool bar**.

Tap  on the **tool bar**. Position the **stylus** on the graph view window, and drag the window to an appropriate location. Once the **stylus** is removed, the graph will be redrawn at that particular location.



Zoom

The ClassPad features an extensive selection of **Zoom** commands that can be used for either a specific region of a graph or to enlarge and/or reduce an entire graph.



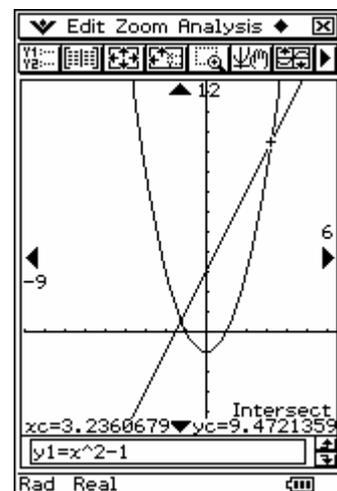
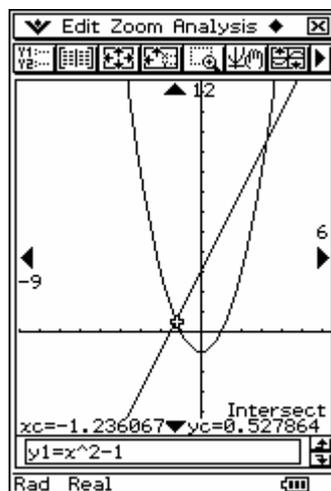
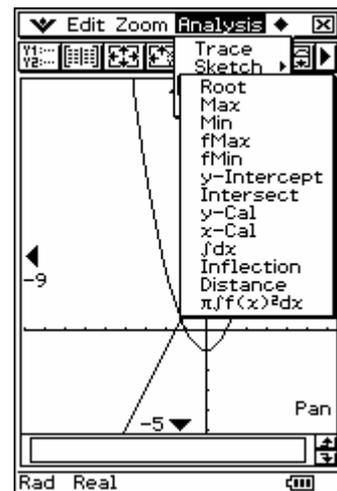
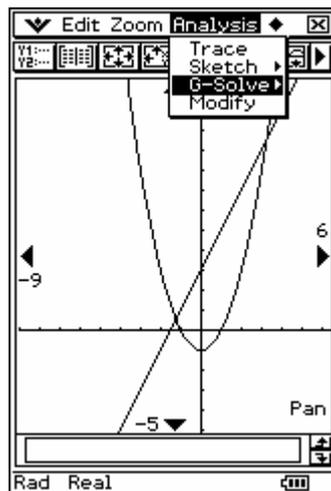
Finding significant points on a graph.

Tap the **Analysis** option on the **menu bar**, tap **G-solve**, and then select from the (extensive) drop down menu what you would like to do. (See screen capture below for an example).

Intersection point/s

Tap the **Analysis** option on the **menu bar**, tap **G-solve**, and then select **Intersect**. This function will locate and display the intersection point of the graphs.

Where there is more than one intersection point to be found, simply use the **cursor key** (left and right) to allow the next intersection point to be located.

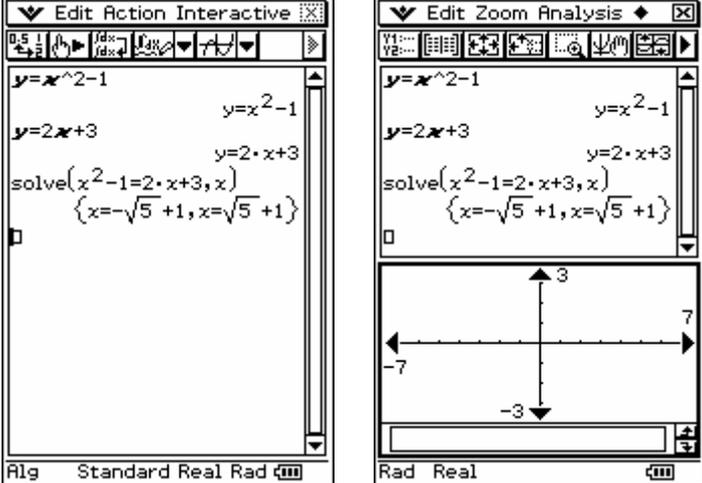
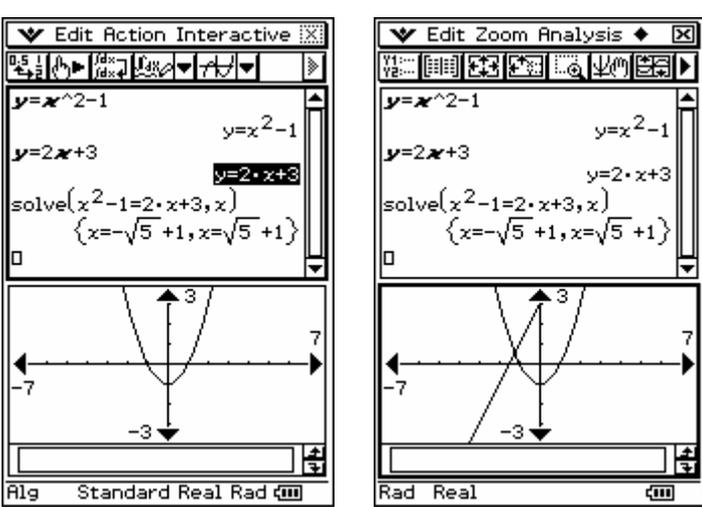
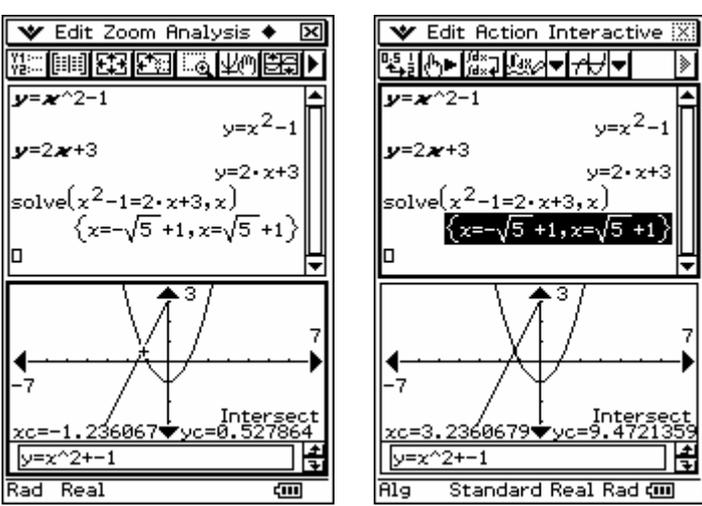


Section 4 – Using a dual window display

The ClassPad has a large screen. It allows us to have two applications visible the same time.

For example we can have the  application and the  application visible at once allowing students to visualise symbolic and graphical representations simultaneously, reinforcing the concept of exact and approximate solutions

Let's try something:

Instruction	Demonstration
<p>Plot the following:</p> <p>a) $y = x^2 - 1$</p> <p>b) $y = 2x + 3$</p> <ol style="list-style-type: none"> Tap  on the icon panel. Input the function/s. Press (EXE). Insert a graph window by selecting  from the tool bar. A graph window should appear. Highlight the entire function and drag it into the graph window. The graph of the function will automatically appear in this window. 	
<p>Note: The menu bar, tool bar options and status bar change when the graph window is active (has the bolder border).</p>	
<p><i>The adjacent screen captures, emphasises the concept of both the exact and approximate solutions on the ClassPad.</i></p>	

Where to now?

This was just a quick introduction to get you started on the ClassPad.

If you need more assistance, go to <http://www.casioed.net.au> for lots of juicy tidbits!

Also available on this site the next book in the series:

How do I ... on the ClassPad - NZ?

Written by Elena Zema

Edited by Anthony Harradine

Baker Centre, Prince Alfred College.

“Designed and written to support your use of ClassPad. The contents range from basic introductory skills, to skills associated with graphing, Statistics, Probability, Geometry and Calculus. It also includes a chapter on Algy 2.

While available in paper format, various versions of this book can be downloaded from:

<http://www.casioed.net.au/teachers/classpad/textbook.php>