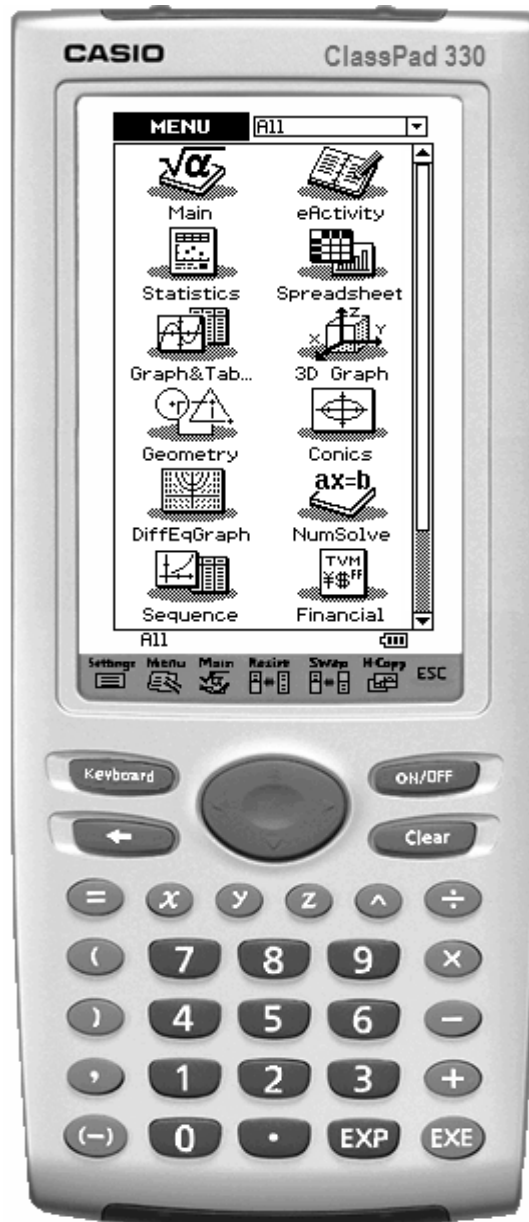


ClassPad 330 Version 3.04

Step by Step *An Example for each Application*



ClassPad website: <http://edu.casio.com/products/classpad/>

CASIO Education website: <http://edu.casio.com>

For information on where to buy, FAQs, user's guides, please visit:

<http://edu.casio.com/support/>

Written by
CASIO Education Technology M.R.D. Center
Portland, Oregon USA

Index

Main ... page 2

Math calculations with a computer algebra system (CAS).

eActivity ... page 4

Input math, text, and other applications to create and save activities, and share data between applications using drag and drop.

Verify ... page 7

Verifies your work (available from within Main or eActivity).

Statistics ... page 8

Input lists of data, obtain statistical results and draw stat graphs.

Statistics Wizard ... page 9

Statistical tests, intervals and distributions made easy.

Probability ... page 10

Random samples for dice and more (available from within Main or eActivity).

Spreadsheet ... page 11

Similar to a standard spreadsheet application with the added ability to use CAS commands.

Using the Statistics Wizard in the Spreadsheet Application...page 12

Statistical results for multiple inputs.

Graph & Table ... page 13

Graph functions and relations, view properties and data tables.

3D Graph ... page 14

3 Dimensional graphing in rectangular or parametric form.

Geometry ... page 15

Constraint based Geometry designed to interact with Algebra.

Conics ... page 16

Graph a conic section, transform an equation into a conic form and view properties.

DiffEqGraph ... page 17

Graph various types of differential equations and more.

NumSolve ... page 18

Solves an equation based on known values input by the user.

Sequence ... page 19

Solve, graph and create tables for recursive and explicit equations.

Financial ... page 20

Simple to use, offers 15 different financial calculations.

Advanced Math Features ... page 21

Implicit differentiation, Laplace, Fourier and more.

Picture ... page 23

Similar to a standard paint application (available on PC only).

Program ... page 24

Create custom programs.

Presentation ... page 25




Allows you to create a slideshow for presentation or review.

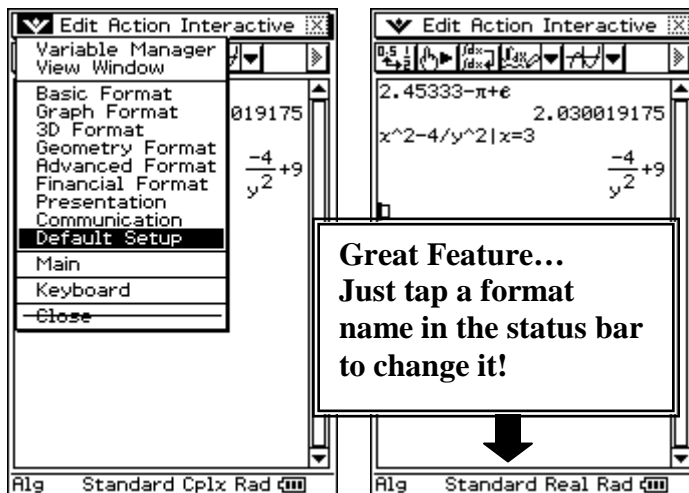
Communication and System ... page 26

Link to a PC or another ClassPad 330. Memory management and other system configurations, including setting the contrast, defining shift keys and naming ClassPads.

Hi! Each section of this handout introduces you to a different feature of the ClassPad. To ensure that you get the same results as we do, please make sure your status bar displays the same settings. Have fun learning how to drag, drop and explore math in a new way!




Setting the Result Type

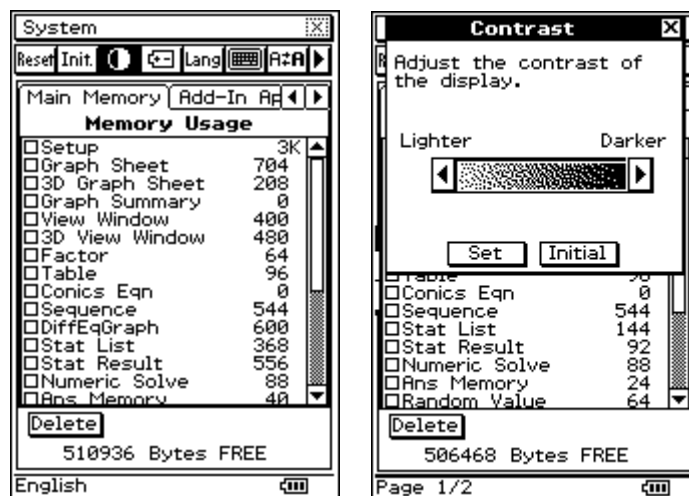
- Tap  and then 
- Open the  menu (tap to open)
- Select **Default Setup**
- Tap the **OK** button to reset
- Tap **OK** again
- Notice that some of your basic format settings show in the **status bar**



Setting Contrast

***Handheld ClassPad 330 Only**

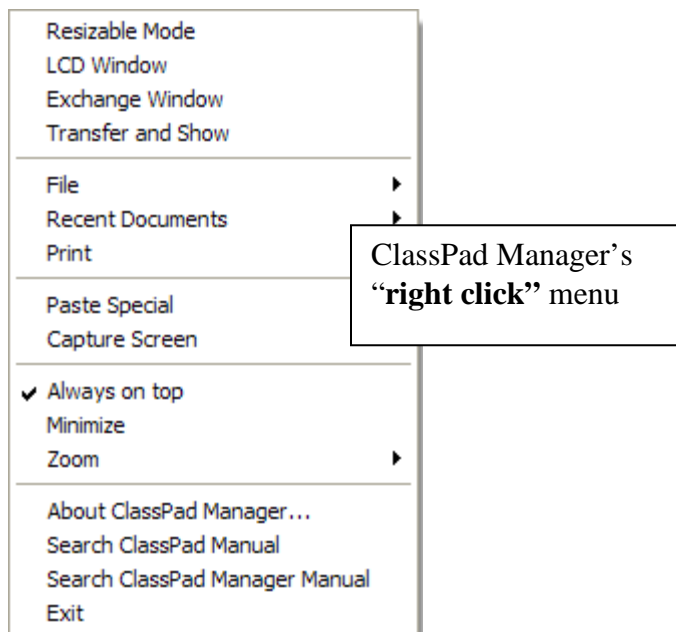
- Tap  and then 
- Tap  (on the toolbar)
- Adjust the contrast
- Select **Set**



Resizing the Window



***Computer Software Only**

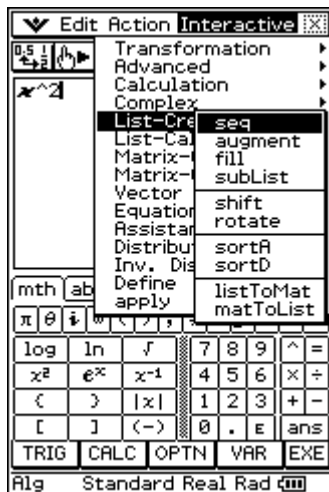
- Right click** anywhere on the ClassPad Manager
- If you have the *ClassPad Manager Professional* version, select **Resizable Mode** (drag a window edge to resize)
- If you have only the *ClassPad Manager Basic* version, select **LCD Window** for better viewing
- I like to check the “Always on top” option



Using the Main Application

Creating a Sequence

- Tap  and then 
- Input x \uparrow 2
- Select x^2
- Open the **Interactive** menu
- Select **List-Create** and then **seq**
- Fill in the data and select **OK**
- You will see {1,4,9,16,25,36,49,64}



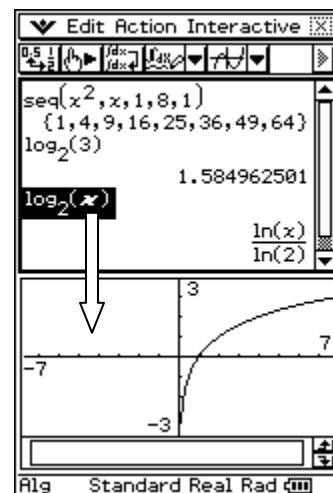
Using 2D Math

- Press the **Keyboard** key
- Tap the **2D** tab and select \log_2
- Input 2
- Press the right cursor key
- Input 3 and press **EXE**
- Tap on the line containing $\log_2(3)$
- Tap $\frac{1}{2}$ to change result to decimal



Dragging and Editing Data

- Drag over $\log_2(3)$ to select it and let go
- Press on selection and drag to next line
- Let go when you see the **cursor blinking**
- Select the 3 in $\log_2(3)$
- Tap the x key and press **EXE**



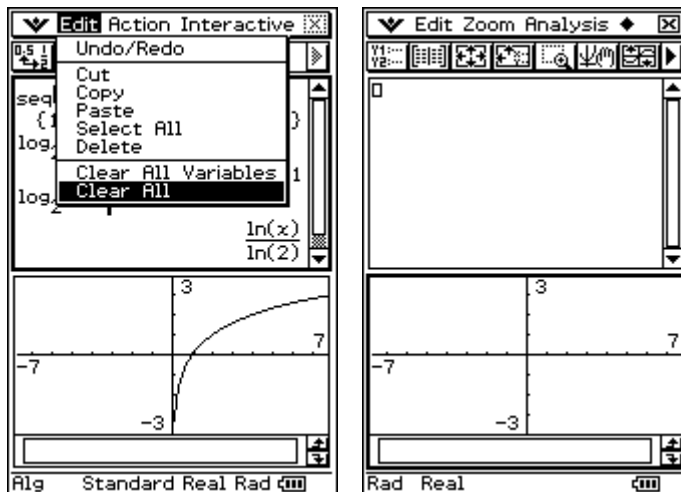
Graphing within Main

- Tap the \downarrow arrow on the toolbar and select $\log_2(x)$
- Select $\log_2(x)$ and release
- Drag the selection to the graph window

Using the Main Application (continued)

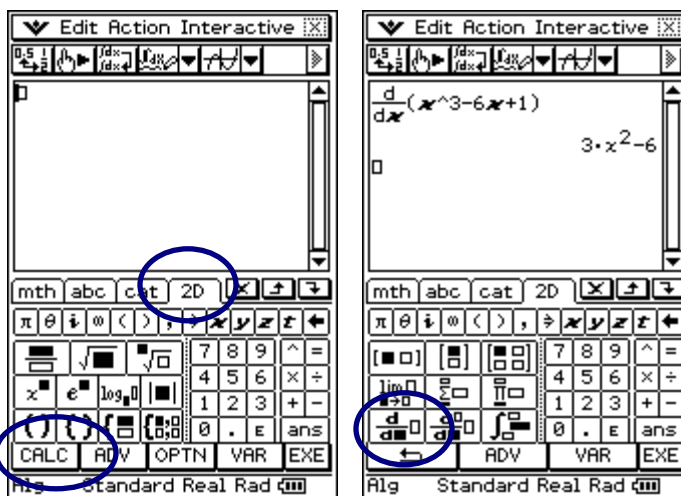
Clearing the Work Area

- Tap in the **Main** window to give it focus (notice the toolbar and bolder window border)
- Select **Edit** and then **Clear All**
- Select **OK**
- Tap in the **Graph** window to give it focus
- Select **Edit** and then **Clear All**
- Select **OK**



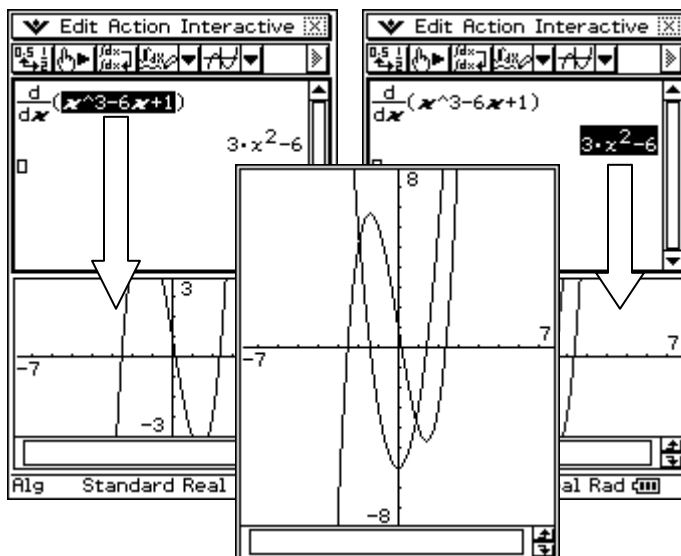
More 2D Math

- Tap in the **Main** window and then press the **Keyboard** key
- Tap the **2D** tab and then the **CALC** button
- Select the **2D derivative** symbol
- Tap the **x** key
- Press the right cursor key
- Input $x^3 - 6x + 1$ and press **EXE**









More Graphing within Main

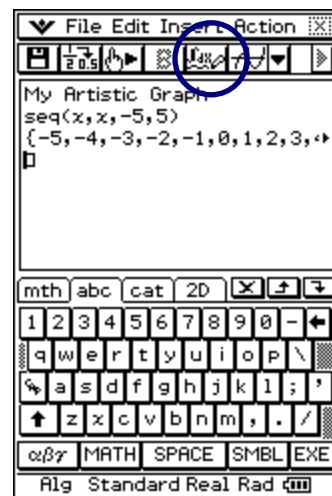
- Press the **Keyboard** key again to close the keyboard
- Select $x^3 - 6x + 1$ and let go
- Press on the selection and drag to the graph window
- Tap $3x^2 - 6$ (the result) to select it
- Press on the selection and drag to the graph window
- Tap the **Resize** icon (just above the hard cursor key)






Using the eActivity Application

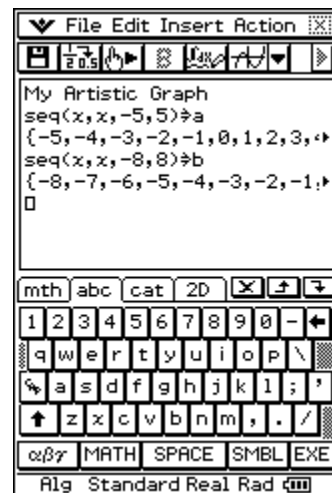
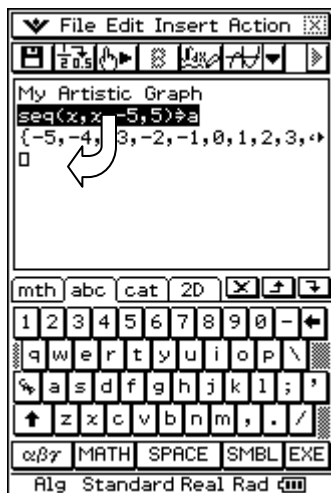
Entering Text and Math

- Tap  and then .
- Select **Edit** and then **Clear All**
- Press the  key
- Tap the **abc** tab and type in the text shown
- Tap anywhere on the line: $\text{seq}(x,x,-5,5)$
- On the toolbar, tap  to toggle it to  (changing from type text to math)
- Press 







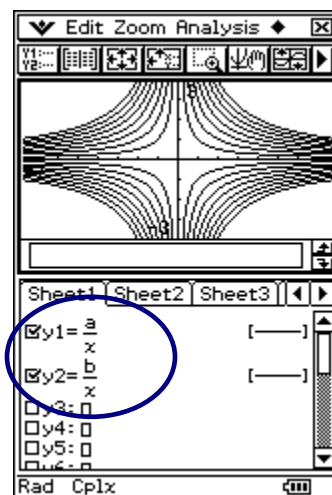
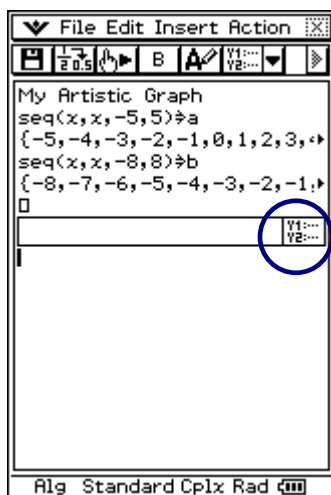
Storing Values in Variables

- Tap (place focus) following $\text{seq}(x,x,-5,5)$
- Tap the **math** tab on the keyboard
- Tap the  key and then **a**
- Press  to store list in a
- Select $\text{seq}(x,x,-5,5) \Rightarrow a$ and let go
- Press on selection and drag to the next math line (let go when you see the cursor blinking)
- Change the sequence to $\text{seq}(x,x,-8,8) \Rightarrow b$ and press 



Inserting a Strip & Begin Drawing

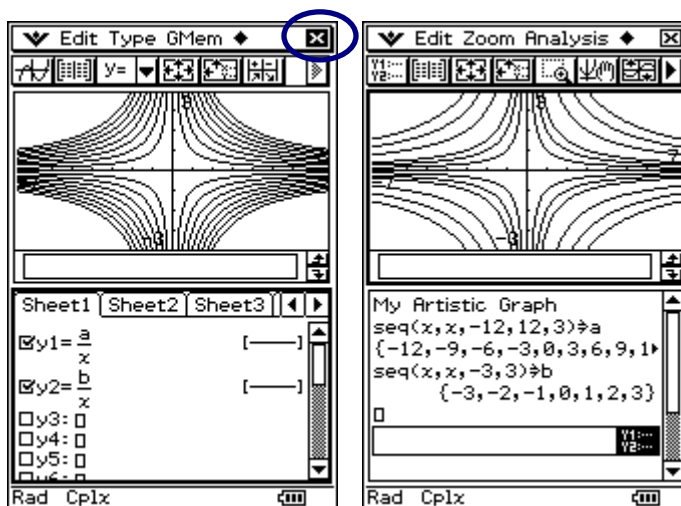
- Open the **Insert** menu and select **Strip** then **Graph Editor**
- To understand strips, tap in eActivity and then tap  to minimize the Graph Editor
- Tap it again  to reopen the Graph Editor strip (Easy and fun!)
- Input and  the equations shown
- Tap the  toolbar button!



Using the eActivity Application (Continued)

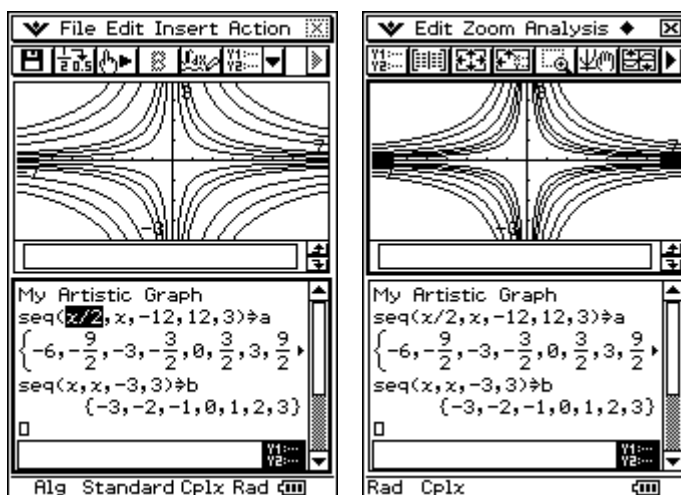
Changing Graphs Automatically

- Important:** Tap in the **Graph Editor** window to give it focus
- Close the Graph Editor window by tapping the small \times in the upper right corner**
- Important:** In eActivity, **change each sequence** as shown
- Important:** Tap on the line containing $\text{seq}(x,x,-12,12,3)\Rightarrow a$ and **press EXE**
- Tap in the Graph window** and it updates automatically!



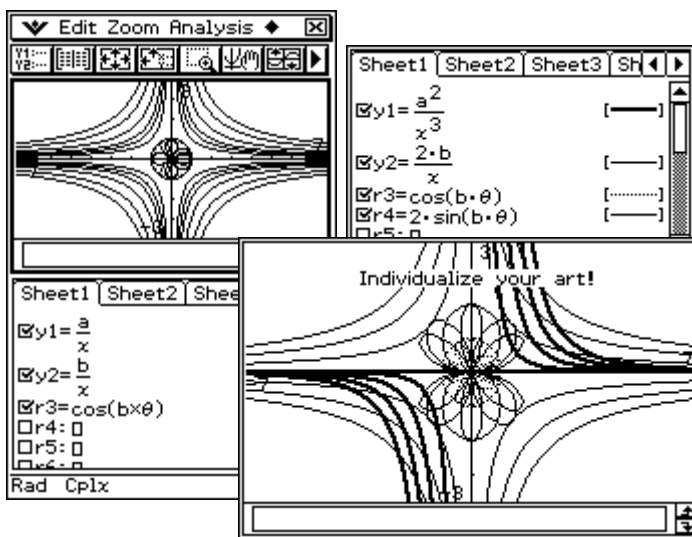
Changing Graphs (continued)

- Tap in eActivity** again
- Change the beginning of the 1st sequence from x to $x/2$ and press EXE**
- Tap in the Graph window** and it updates automatically!





Improving our Graphic Art

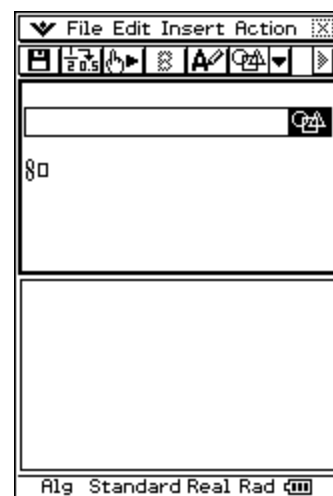
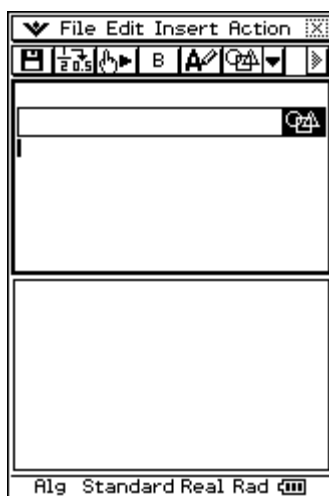
- Tap in the Graph Editor** window
- Tap the $\frac{Y1}{Y2}$ toolbar button**
- Tap the ∇ toolbar button and select $r=$ (polar graph form)**
- Tap following $r3$: and type $\cos(b \times \theta)$**
- Press EXE** [θ is in the mth tab of the keyboard or press Ctrl+t on a computer keyboard]
- Tap in the Graph window**
- Open the **File** menu and **select Save** to save your artistic graph!




Using the Geometry Link within eActivity

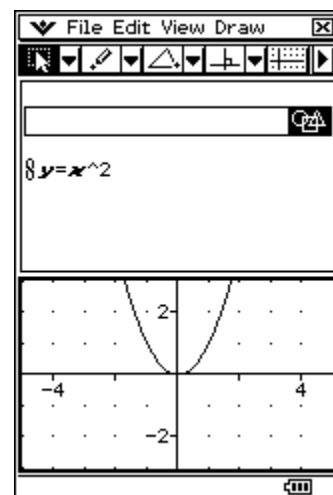
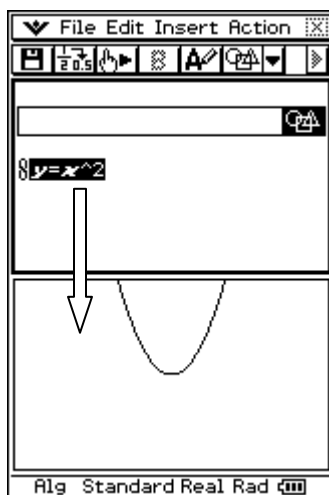
Inserting a Geometry Link

- Tap  and then  (if needed)
- Select **Edit** and then **Clear All**
- Open the **Insert** menu and select **Strip** then **Geometry**
- Tap below the Geometry strip that you just inserted
- Open the **Insert** menu and select **Geometry Link**




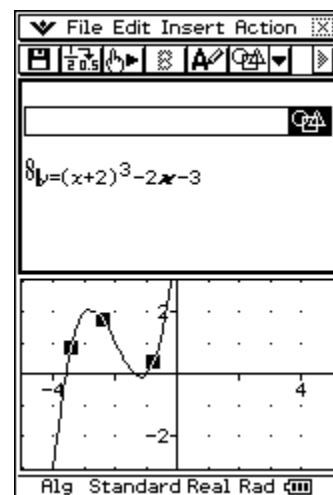
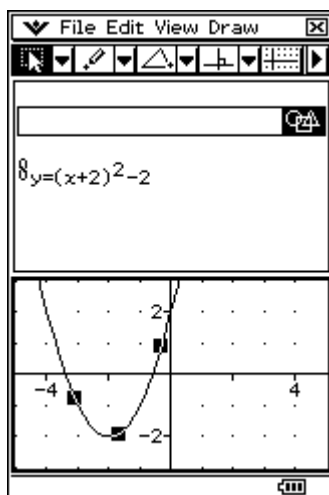
Linking an Equation to Geometry

- Tap in the box just following the link symbol
- Input $y = x^2$
- Select $y = x^2$ and let go
- Press on the selection and **drag** to the **Geometry** window
- Tap  **three times** to turn the axis and grid on






Exploring with the Geometry Link

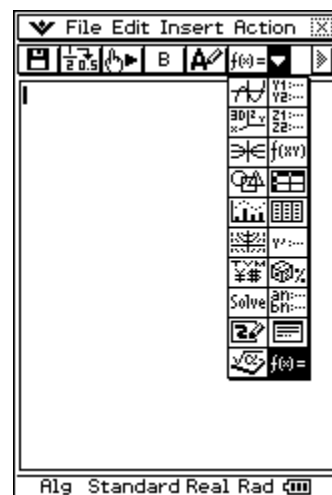
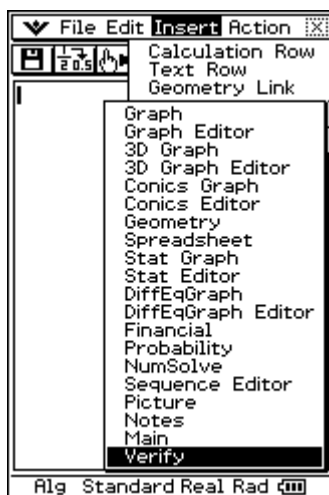
- Select the graph you just drew (tap it)
- Press on a handle (■) and **drag** to move your graph (notice the linked equation updated)
- Tap in the **eActivity window**
- Change** your equation and press 
- Try other equations, such as $y = \sin(x)$







Using Verify within eActivity (also available in Main)

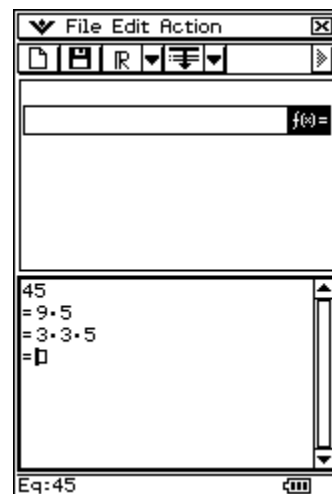
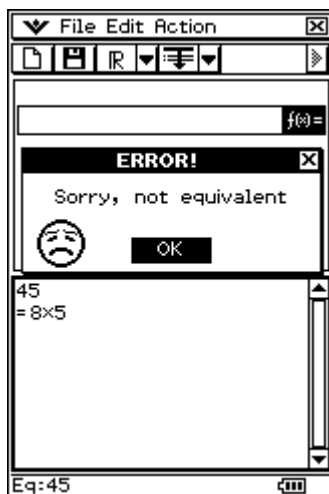
Inserting a Verify Window

- Tap  and then  (if needed)
- Select **Edit** and then **Clear All**
- Open the **Insert** menu and select **Strip** then **Verify**
- Or, you can select Verify's button () from the dropdown button palette
- You will also find Verify's button in the Main application's dropdown button palette









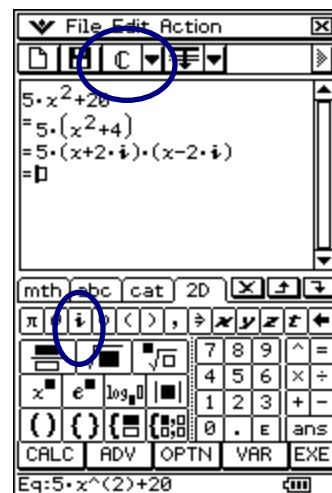
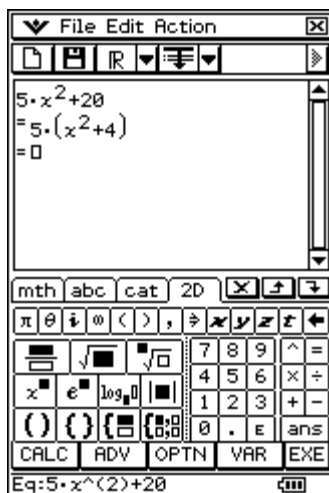
Using Verify to Assist in Factoring ☺

- Tap in the top box
- Type in **45** and press 
- To see what happens, type **8 × 5** in the next box and press 
- Tap **OK** and change **8 × 5** to **9 × 5** and press 
- In the next box, type in **3 × 3 × 5** and press 





Using Verify to Assist in Algebra

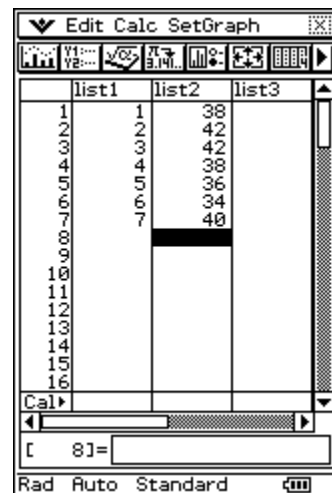
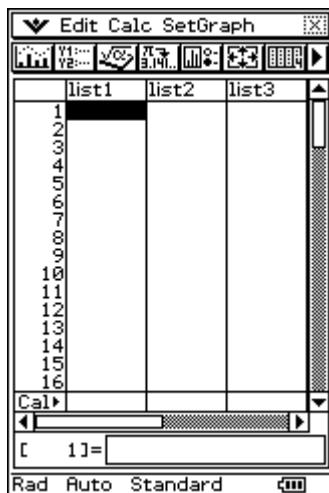
- Tap the  button and select **OK**
- Type in $5x^2 + 20$ and press 
- Next, type in $5(x^2 + 4)$ and press 
- Tap the **down arrow** () on the toolbar and select .
- Next, type in $5(x+2i)(x-2i)$ and press 
- Thumbs up for complex numbers!



Using the Statistics Application

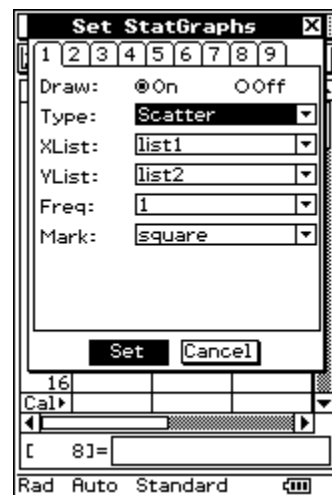
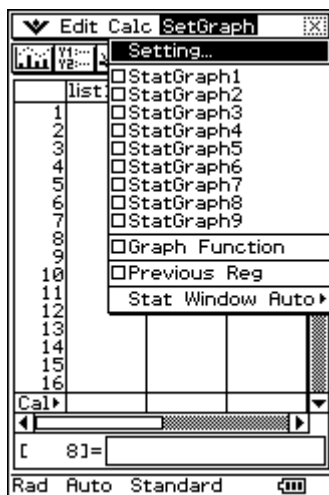
Entering Data

- Tap  and then .
- If needed, open the **Edit** menu and select **Clear All**.
- Tap below list1.
- Input data** and press **EXE** after each input.
- *Data is the low temperature predicted for 12/21/03 – 12/27/03 in Portland, Oregon.




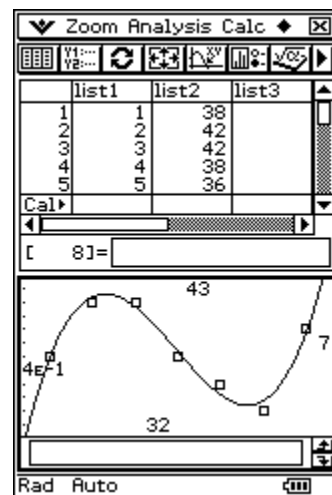
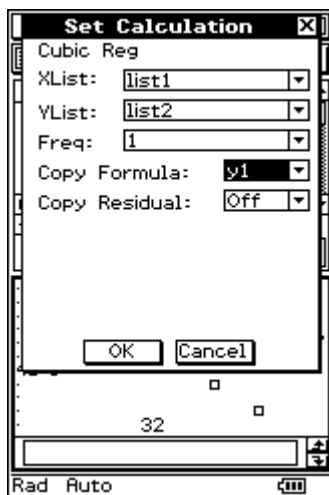
Setting Stat Options

- Open the **SetGraph** menu.
- Select **Setting...**.
- Setup **page 1** for StatGraph1.
- Tap **Set**.




Graphing Data & Regressions

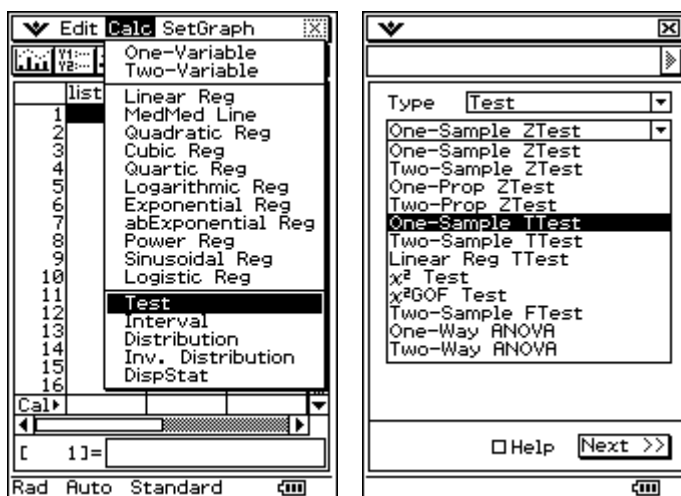
- Tap  to plot your data (first icon on toolbar).
- Open the **Calc** menu and select **Cubic Reg**.
- If you want to, set **Copy Formula** to **y1**.
- Tap **OK** to close dialogs.
- Note: Copy Formula places the regression equation in the Graph Editor application.



Using the Statistics Wizard for Tests, Intervals and Distributions

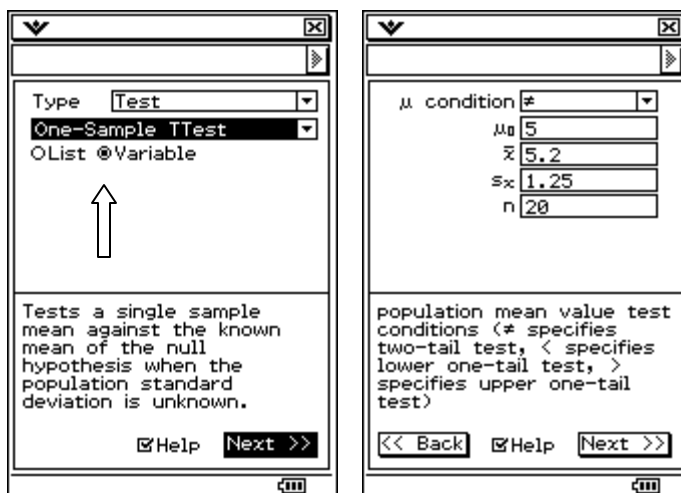
Selecting a Test

- Tap in the List Editor window to give it focus
- Open the **Calc** menu and select **Test**
- Tap  (just above the cursor pad)
- Select **One-Sample TTest** from the drop down list
- If you want to, Help





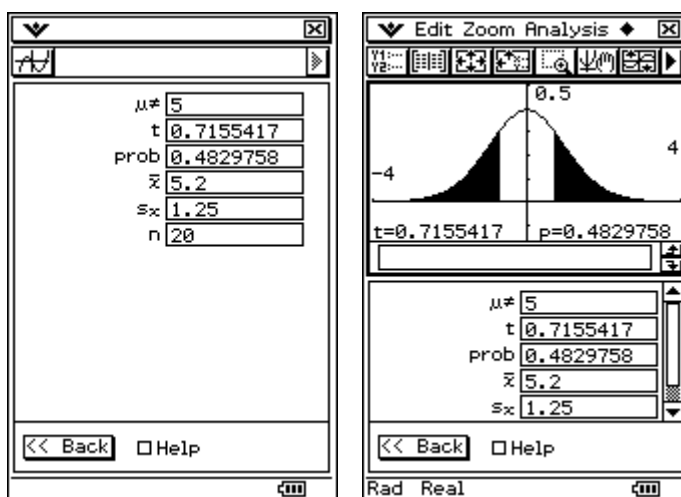
Inputting Data

- Select the type **Variable**
- Tap **Next**
- Input the data shown
- Tap **Next**








Graphing and Experimenting

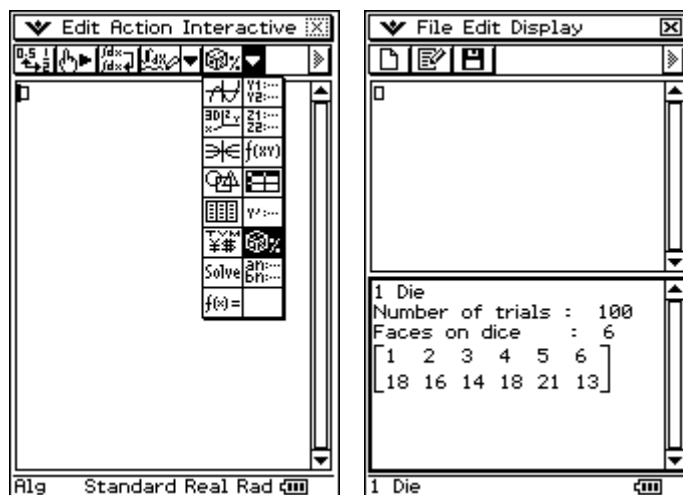
- Tap  to graph
- To experiment, tap the **<< Back** button and change \bar{x} to 5.5
- Tap **Next** and then tap  again
- Try using the wizard for intervals and distributions



Using Probability within Main (also available in eActivity)

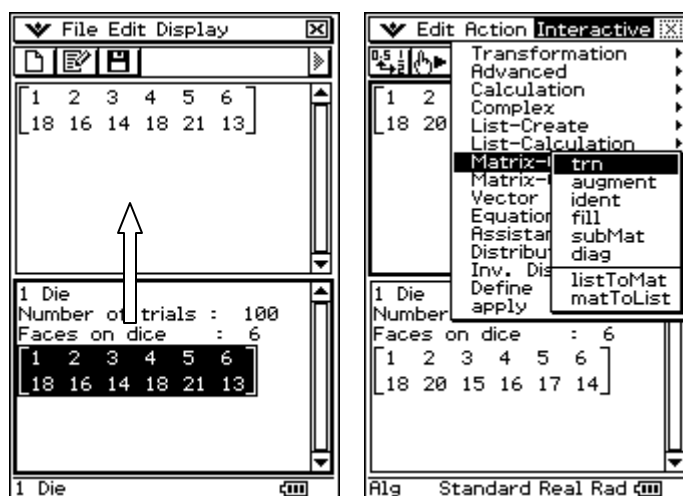
Probability and Rolling a Die

- Tap  and then 
- Select **Edit** and then **Clear All**
- Tap the 2nd  button and select 
- Tap **OK** to accept
- Tap  to begin a new trial
- Tap **OK** to clear the last trial
- Change **Number of trials** to **100**
- Tap **OK**







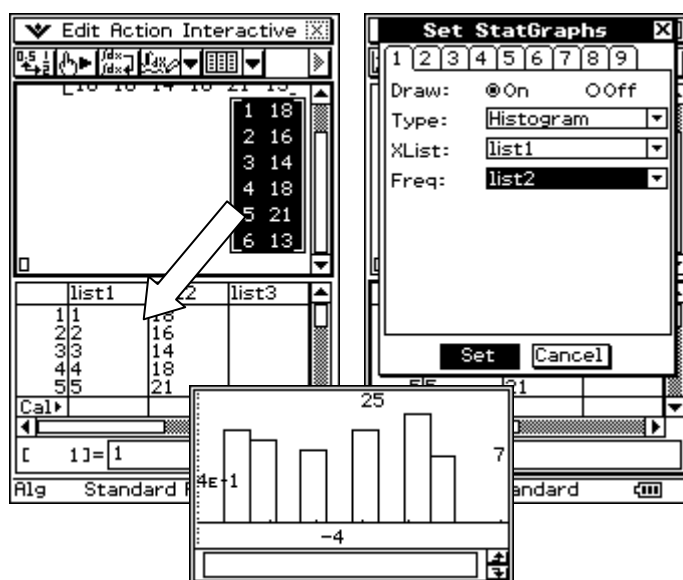
Turning a Matrix

- Tap the **matrix** to select it and let go
- Press on the selection and **drag** to the small input box in Main
- When you see the **cursor blinking**, let go
- Select the **Matrix** in **Main**
- Open the **Interactive** menu and select **Matrix-Create** then **trn**







Displaying a Histogram

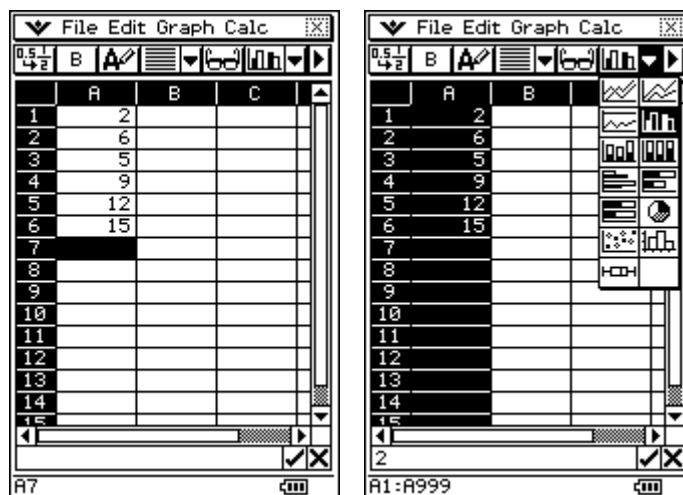
- Tap the 2nd  button again and select  (List Editor)
- Tap the **output matrix** in the Main window to select it
- Press on selection and **drag** to the List Editor
- Tap the  button and change **Type** to **Histogram**
- Set **XList** to **list1** and **Freq** to **list2**
- Tap the  button and then **OK** to the dialog for step size



Using the Spreadsheet Application

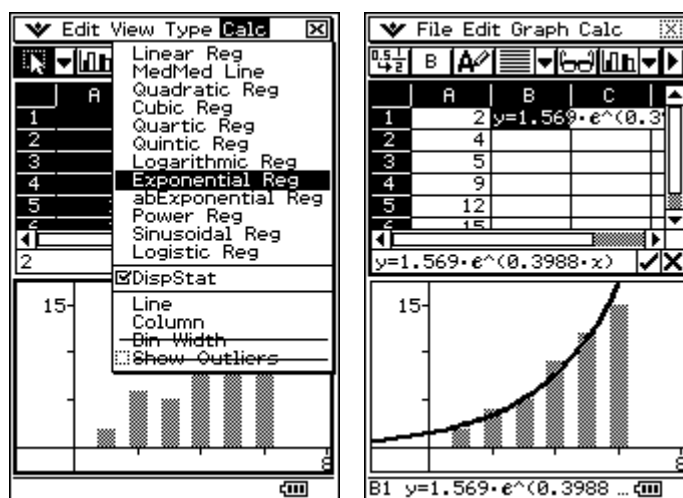
Entering and Graphing Data

- Tap  and then 
- Tap in cell **A1**
- Input** the data shown pressing **(EXE)** after each entry
- Tap the **column heading** for column **A** to select it
- Tap the 2nd  arrow on the toolbar and select  (Or, open the Graph menu and select Column/Clustered)






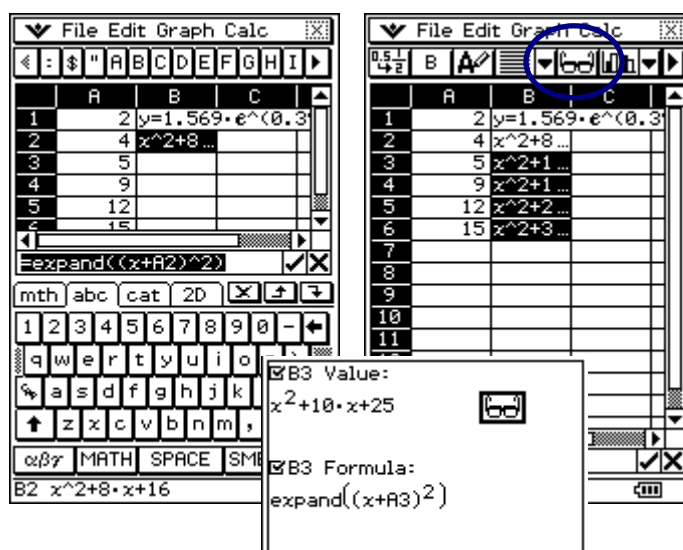
Drawing a Regression

- Tap in the graph window
- Open** the **Calc** menu and select **Exponential Reg**
- Tap **Close** when ready
- Change** cell **A2** from **6** to **4** and press **(EXE)** (curve updates automatically!)
- Tap on the regression curve to select it (near left border is easiest)
- Press on the curve (near left border) and drag to cell **B1**






Using a CAS Command

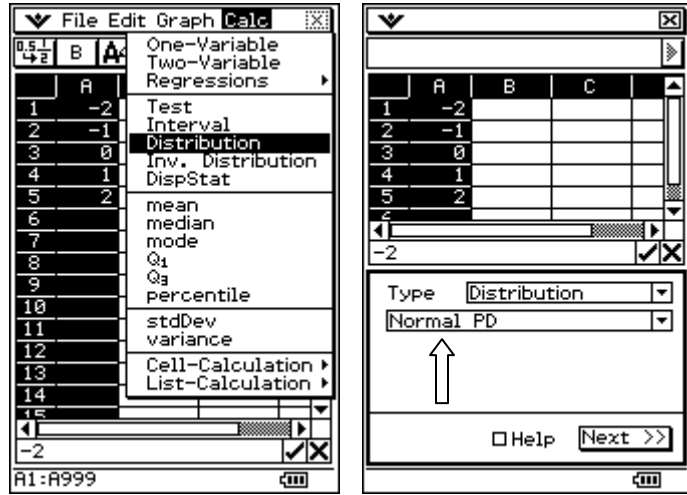
- Tap in cell **B2** and then tap 
- Press the **(Keyboard)** key and **type** in **=expand((x+**
- Tap cell **A2** and then type **)^2)**
- Press (EXE)** and then **select cell B2**
- Open the **Edit** menu and select **Copy** (or tap  on keyboard)
- Close the keyboard (press **(Keyboard)**)
- Drag over** cells **B3 to B6** to select them
- Open the **Edit** menu and select **Paste**
- Tap on cell **B3** and then tap 





Using the Statistics Wizard in the Spreadsheet Application

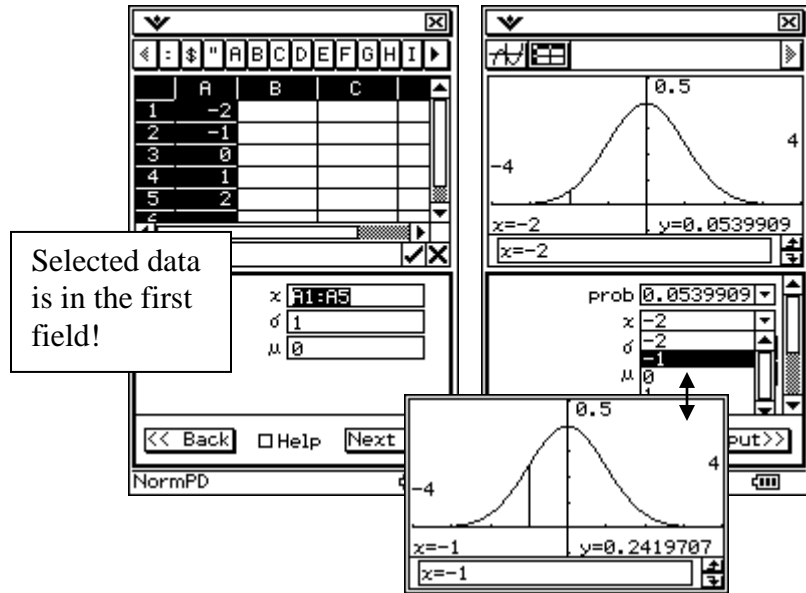
Finding the Statistics Wizard

- Tap  and then 
- Select **Edit** and then **Clear All**
- Input** the data shown pressing  after each entry
- Tap the **column heading** for column A to select it
- Open the **Calc** menu and select **Distribution**




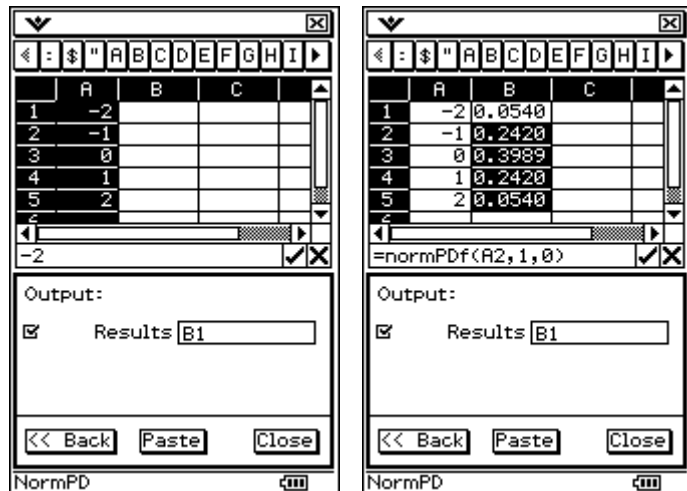
Graphing Results

- With **Normal PD** selected from the drop down list, tap **Next**
- Input the other data shown
- Tap **Next**
- Tap 
- Following Prob, tap the  and select another value
- Notice the graph updates automatically!






Outputting Results

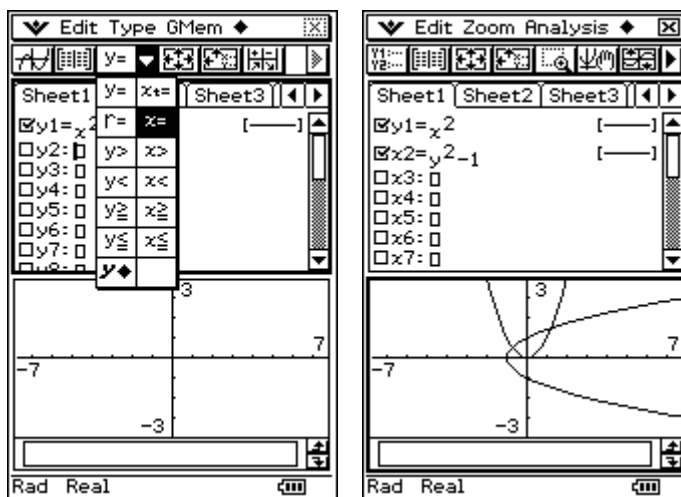
- Tap in the graph window to give it focus
- Tap the upper  to close the graph
- Tap **Output >>**
- Tap **Paste** to place the results starting at B1




Using the Graph & Table Application

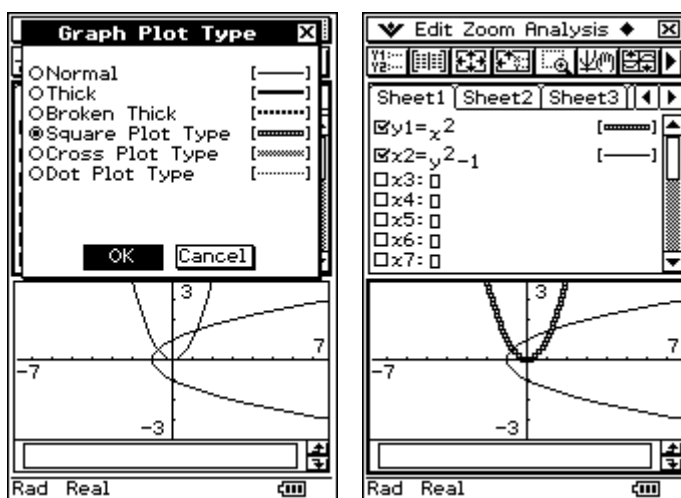
Graphing

- Tap  and then .
- Tap in the **box** following y_1
- Input x \wedge 2 and press EXE
- Tap ∇ on the toolbar and select $x=$
- Input y \wedge 2 $-$ 1 and press EXE
- Tap  to view your graphs (first icon on toolbar)





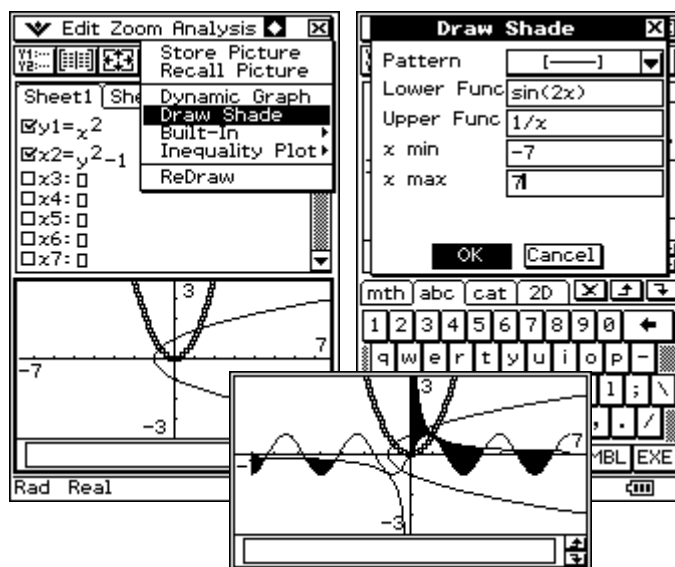
Line Style

- Tap $[-\text{----}]$ to the right of $y_1=x^2$
- Tap a different line style and then **OK**
- Tap  to view your graphs







Using the Shade Type

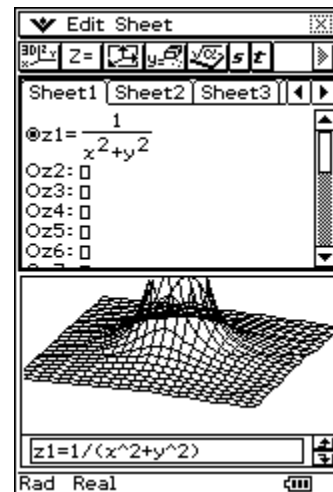
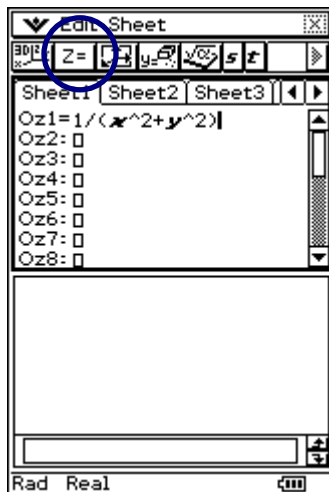
- Tap in the Graph window to give it focus
- Open the  menu and select **Draw Shade**
- Open the keyboard and **input** the data shown
- When finished, tap **OK**
- For fun, tap the  button twice







Using the 3D Graph Application

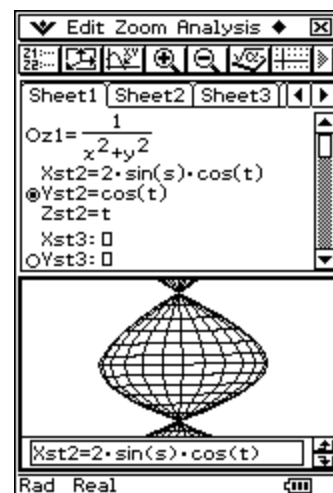
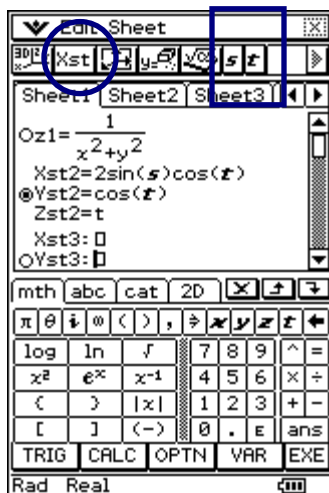
Graphing $z=f(x,y)$ Form

- Tap  and then  3D Graph
- Tap in the **box** following **z1**
- Input: $1/(x^2+y^2)$
- Press 
- Tap  on the toolbar
- Press and drag within the graph window





Graphing in Parametric Form




- Tap in the **box** following **z2**
- Tap the  button to change to parametric
- Press the  key
- Tap the **mth** tab and then **TRIG**
- Input: $Xst2=2\sin(s)\cos(t)$
 $Yst2=\cos(t)$
 $Zst2=t$
- Press  and then tap 

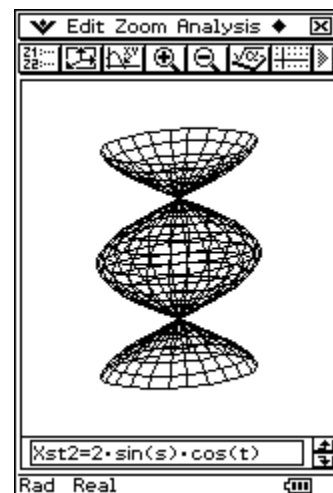
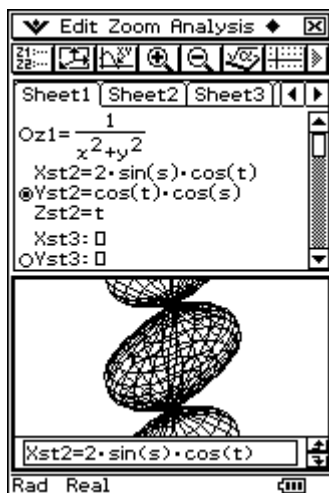


Modifying Graphs

- Change $Yst2$ to $\cos(t)\cos(s)$
- Tap  on the toolbar
- Tap  to enlarge the graph window
- Press and drag to rotate your graph




Hot Keys for all graph windows

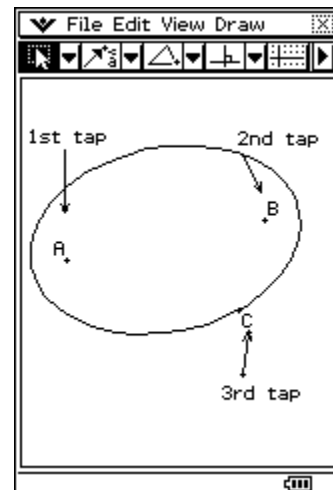
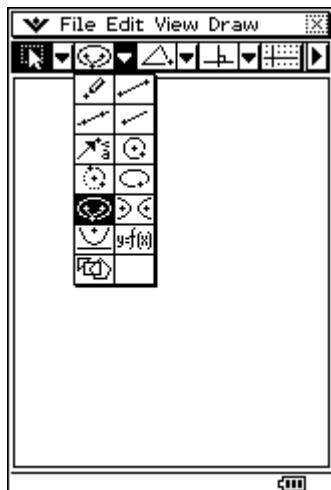
- Tap the  key
- Tap the  key
- Tap the  key





Using the Geometry Application

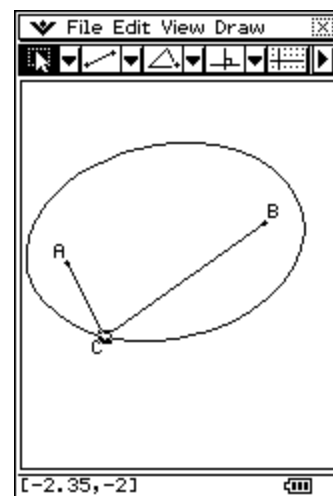
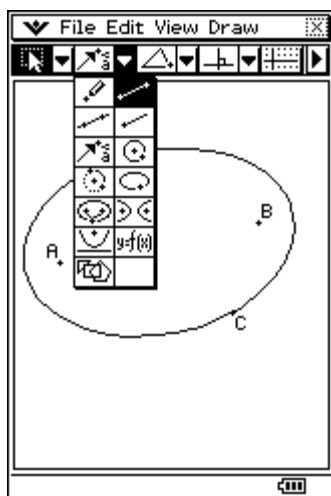
Drawing an Ellipse with Foci

- Tap  and then  **Geometry**
- Tap the 2nd  and select the **ellipse with foci** icon
- Tap twice** (about 1 inch apart)
- Tap** a third time and **drag** until you are happy







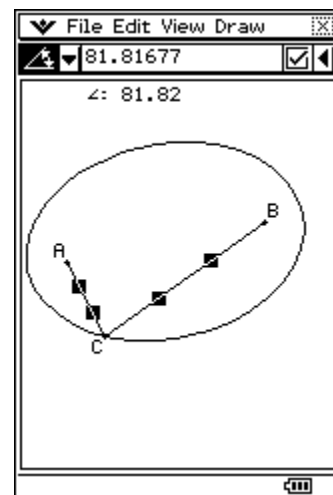
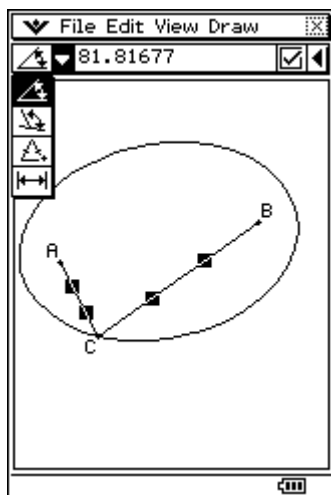
Adding Segments and Selecting

- Tap the 2nd  and select the **segment** icon
- Tap** point **A** and then point **C**
- Tap** point **B** and then point **C** (Notice the status bar as you tap!)
- Select the 1st toolbar button () to change to **select mode**
- Tap point **C**, **let go**, and then **press on C and drag** to move it







Displaying Measure

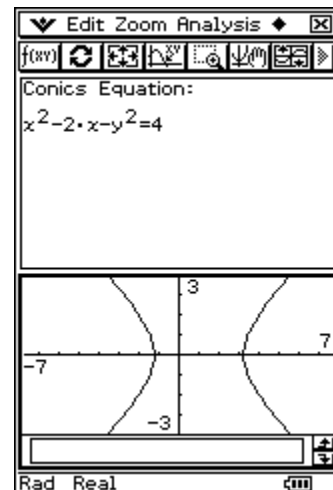
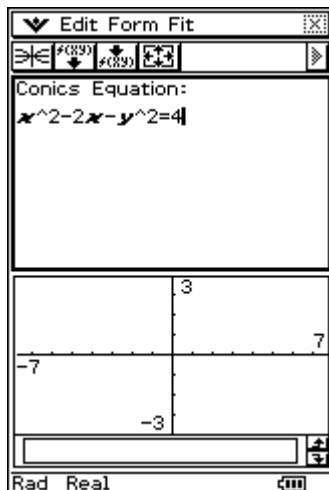
- Tap the right most  to discover the **Measurement Box**
- Tap** in **any white space** to deselect **C**
- Tap** segment **AC** to select it
- Tap** segment **BC** to select it
- Tap  and select  (if needed)
- Tap  to put the angle value in the Geometry window
- Select** point **C** and **drag** – your angle measure updates as you move



Using the Conics Application

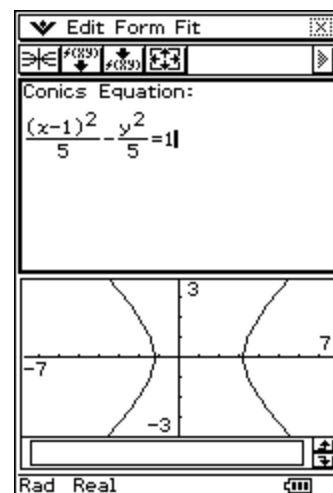
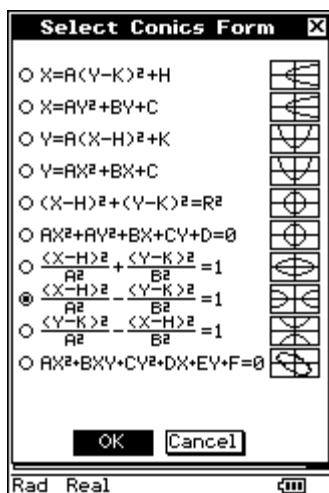
Graphing

- Tap  and then .
- Tap in the **box** below “Conics Equation:”
- Input $x^2-2x-y^2=4$
- Press .
- Tap  on the toolbar
- Open the **Zoom** menu and select **Quick Initialize** (if needed)



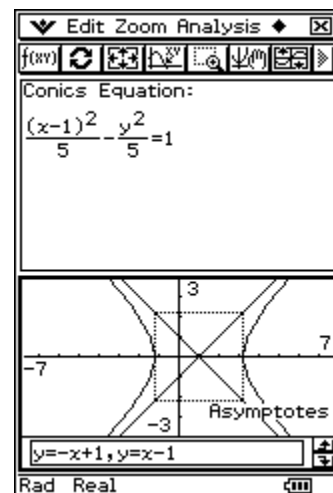
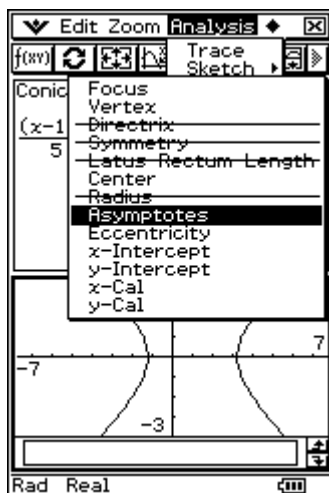
Fitting into a Form

- Tap in the **Conics Equation window** to give it focus
- Open the **Fit** menu and select **Fit into Conics Form**
- Select the correct form
- Tap **OK**






Drawing Asymptotes

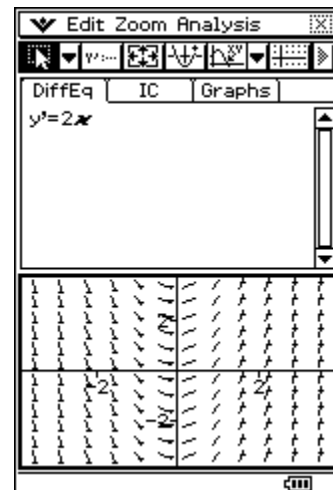
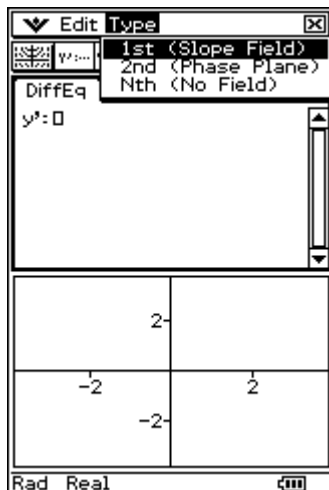
- Tap in the **Graph window**
- Open the **Analysis** menu and select **G-Solve**
- Select **Asymptotes** from the list





Using the Differential Equation Application

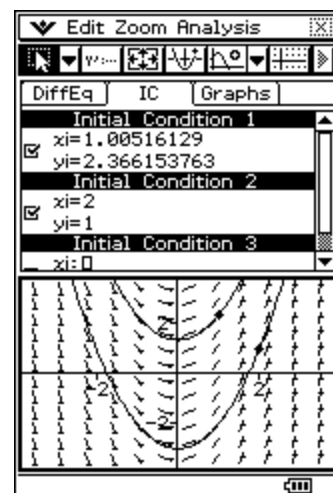
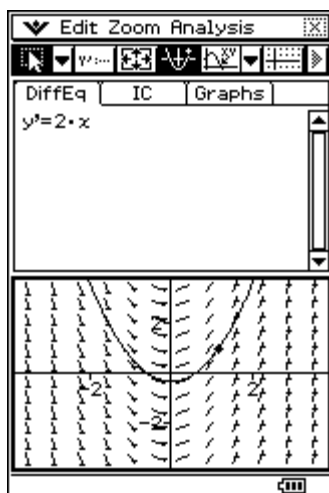
Graphing a Slope Field

- Tap  and then 
- Open the **Type** menu and select **1st (Slope Field)**
- Input $y'=2x$
- Tap  to graph





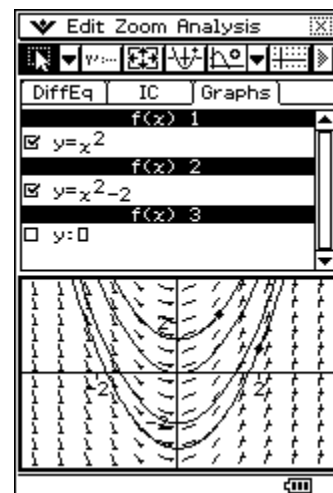
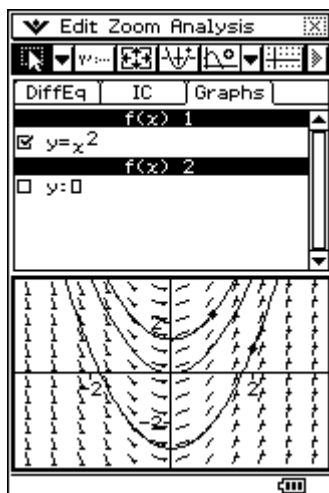
Drawing Solution Curves

- Select the  button
- Tap a single point in the graph window – a solution curve is drawn
- Tap the **IC** tab
- Set $x_i=2, y_i=1$ and press **(EXE)**
- Tap  to graph







Guess a Solution Curve

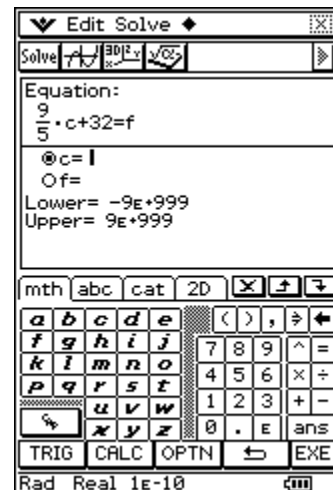
- Tap the **Graphs** tab
- Input your guess and press **(EXE)**
- Tap  to graph
- Input a second guess and press **(EXE)**
- Tap  to graph




Using the NumSolve Application

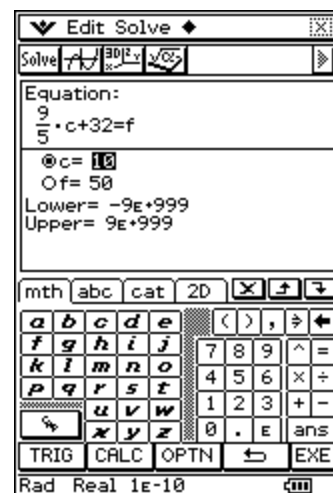
Entering an Equation

- Tap  and then .
- Tap in the box below **Equation:**
- Press the  key
- Tap **math** and then **VAR**
- Input the equation: $\frac{9}{5}c + 32 = f$
- Press 




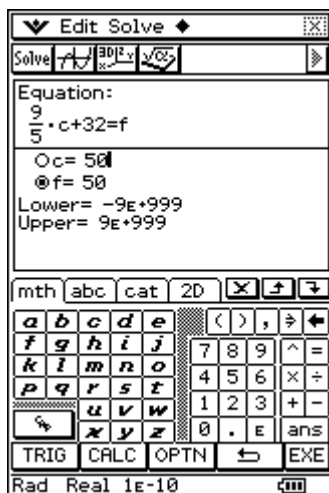
Solve for c when $f = 50^\circ$

- Input **50** for f
- Make sure c 's radio button is selected
- Tap  on the toolbar
- Tap **OK** to the dialog that opens





Solve for f when $c = 50^\circ$

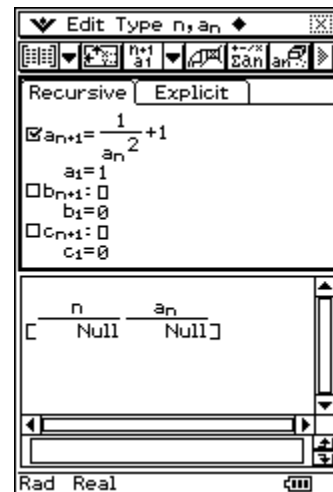
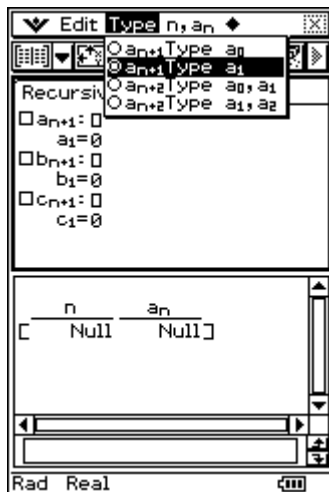
- Input **50** for c
- Make sure f 's radio button is selected
- Tap  on the toolbar
- Tap **OK** to the dialog that opens





Using the Sequence Application

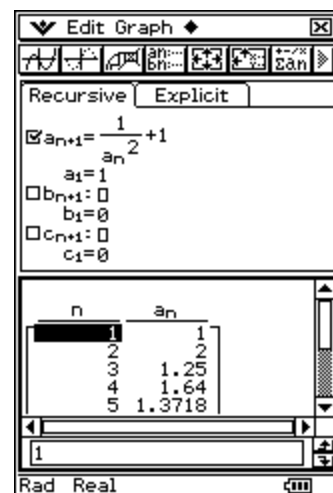
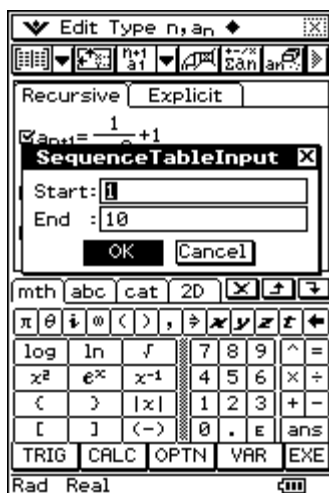
Entering a Sequence

- Tap  and then .
- Open the **Type** menu and select **a_{n+1} Type a_1**
- Open the **n, a_n** menu to find **a_n**
- Input $1/a_n^2 + 1$ for **a_{n+1}**
- Input **1** for **a_1**
- Check the box in front of **a_{n+1}**




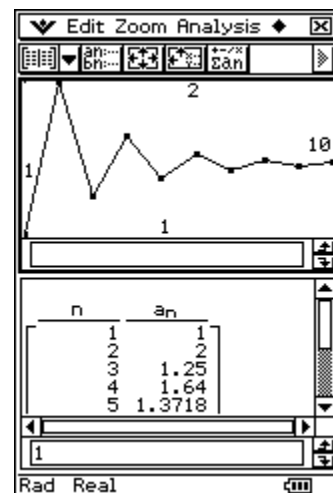
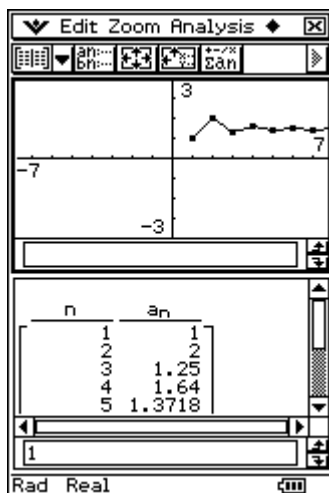
Creating a Table of Values

- Tap the  toolbar button
- Input a **Start value of 1**
- Input an **End value of 10** and tap **OK**
- Tap the  toolbar button



Plotting a Table of Values

- Tap in the **Table window**
- Tap the  toolbar button
- Open the **Zoom** menu and select **Auto**



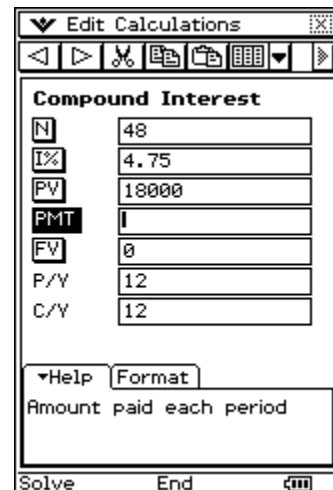
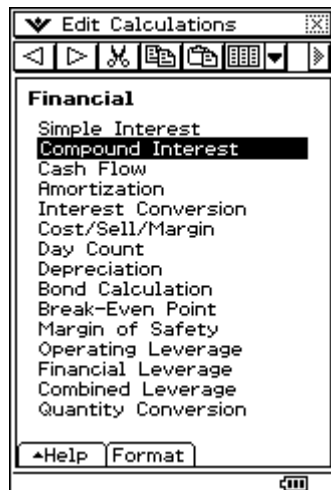
Using the Financial Application

Purchasing a Car

Menu

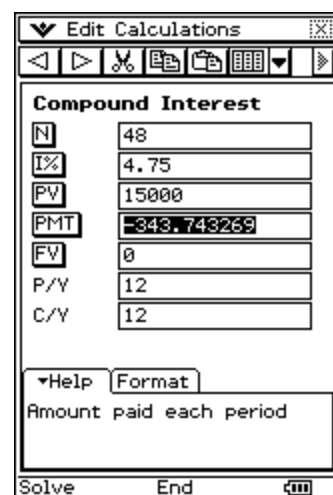
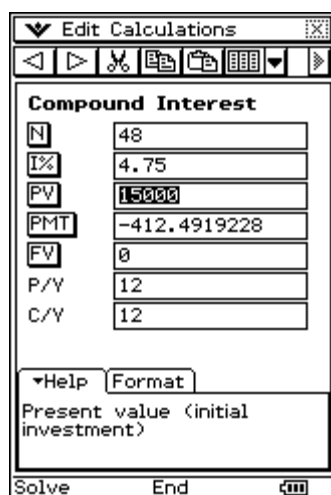


- Tap and then **Financial**
- Select **Compound Interest**
- Tap the **Help** tap (very useful – tap again to close)
- Input the values shown (leave PMT blank)
- Tap the **PMT** or **Solve** in the status bar to solve for your monthly payment (you will need to pay \$412.49 per month)



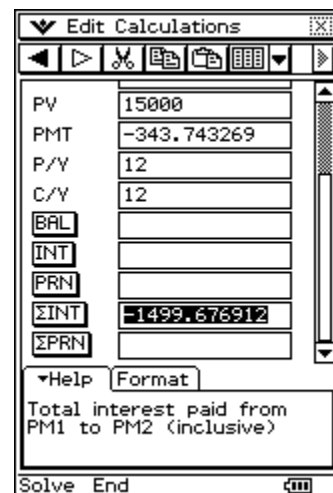
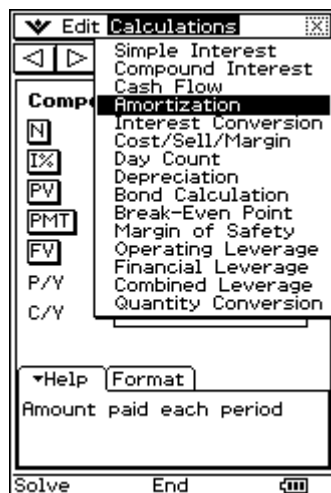
Calculating Options

- How would your monthly payment change if you choose a less expensive car?
- Change **18000** to **15000**
- Tap the **PMT** button to recalculate your monthly payment
- Experiment with length of loan and interest level!





Calculate Interest you will Pay

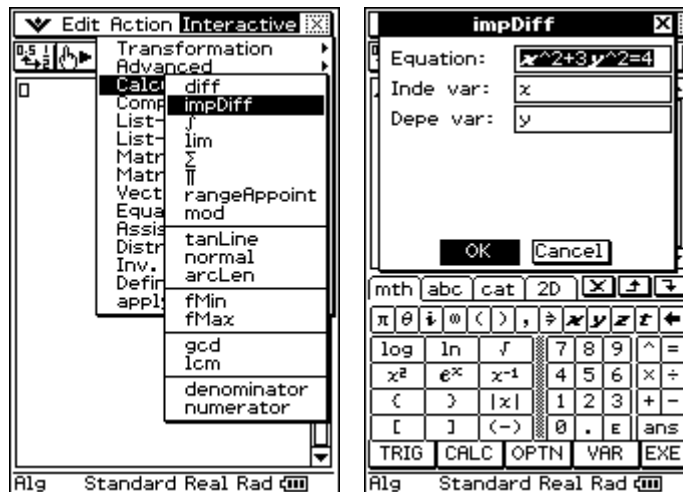
- Open the **Calculations** menu and select **Amortization**
- Input **1** for **PM1** and **48** for **PM2**
- Scroll down** (use the right scrollbar)
- Tap the Σ **INT** button (so you are really paying \$15,000+interest = \$16499.68 for the car)
- Assume you make a down payment of \$3000 and pay \$400 per month. Set PV to 12000 and PMT to -400. Tap Σ **INT** again (interest is now -993.2996078)



Advanced Math Features (New in Version 3)

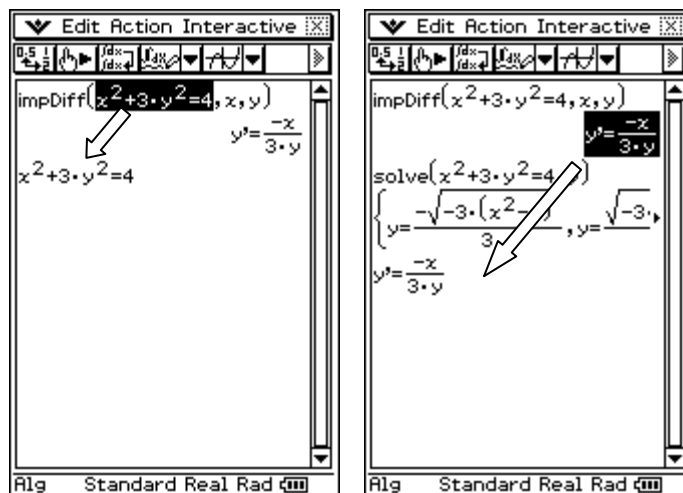
Implicit Differentiation

- Tap  and then 
- Select **Edit** and then **Clear All**
- Type in: $x^2+3y^2=4$
- Drag over your ellipse to **select it**
- Open the **Interactive** menu, select **Calculation** then **ImpDiff**
- Select **OK**






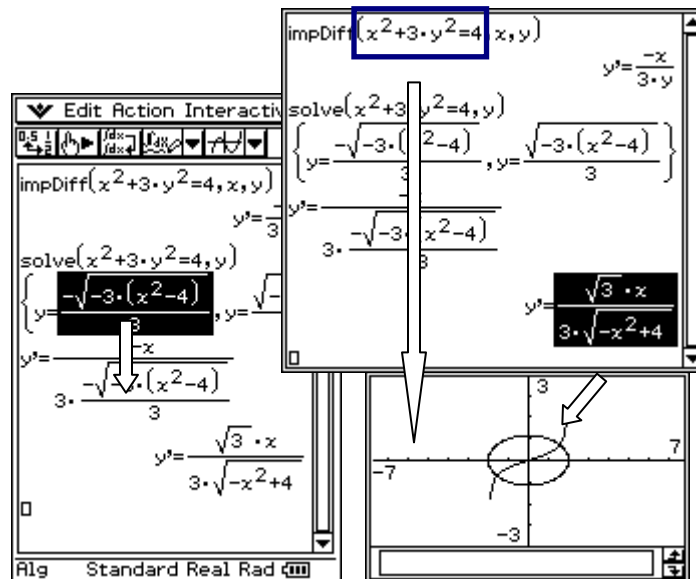
Rewrite y' in terms of x

- Select just $x^2+3y^2=4$ in the first line and let go
- Press and drag selection to the next empty line
- Select (what you just dropped)
- Open the **Interactive** menu, select **Advanced** then **Solve**
- Change “Variable:” to y and select **OK**
- Tap $y' = \frac{-x}{3 \cdot y}$ to select and drag to next empty line








Visualize Ellipse with Derivative

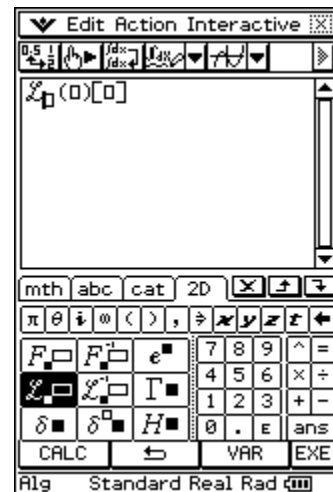
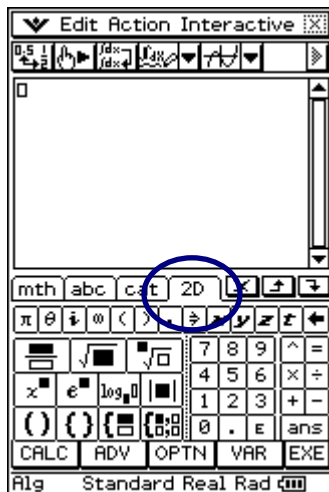
- Select “ y ” in $y' = \frac{-x}{3 \cdot y}$ and press 
- Next, select the **first y solution**, drag to where y was and press **(EXE)**
- Ok (almost there), tap the **2nd**  on the toolbar and select 
- Select $x^2+3y^2=4$, release and then drag to graph window
- Select just $\frac{\sqrt{3} \cdot x}{3 \cdot \sqrt{-x^2+4}}$ (tap twice then drag to select), release and then drag to graph window
- Repeat with $y = \frac{\sqrt{-3 \cdot (x^2-4)}}{3}$









Advanced Math Features (continued)

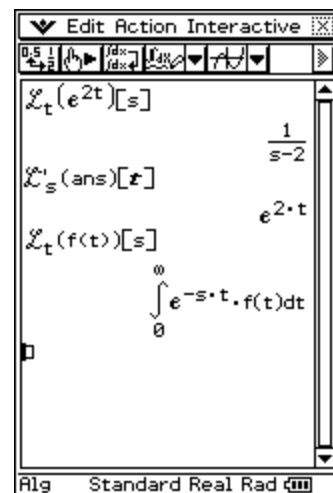
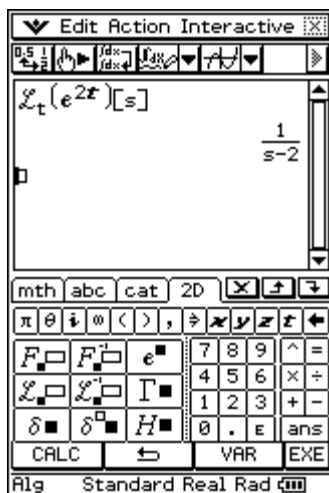
Laplace and Inverse Laplace

- Tap  and then .
- Select **Edit** and then **Clear All**
- Press  and tap the **2D** tab
- Tap the lower **ADV** button and then 
- Tap the return button to go back () if you want to
- Laplace and Inverse Laplace are also in the Action and Interactive menus under Advanced



Using Laplace and Inverse Laplace

- Type in the data and press 
 - *Tap the **abc** tab to input s and t
 - *Tap the **2D** tab and maybe  to find 
- Find , input the data shown and 
- Nice feature:* Input $\mathcal{L}_t(f(t))[s]$ and press  again
- Experiment with Fourier, delta, heaviside and gamma!



If you are using the *ClassPad Manager Professional*, right click and select *Resizable Mode!*

Laplace transforms are often used to solve higher order linear differential equations.

For example, solve $y''-y'+y=0$ given $y'(0)=5$ and $y(0)=1$

1st Find the Laplacian transform:
 $\mathcal{L}_t(y''-y'+y=0)[y,s]$

$$-y'(0)-s \cdot y(0)+Lp \cdot s^2+y(0)-Lp \cdot s+Lp=0$$

2nd Solve for Lp, with initial conditions (Lp short for $\mathcal{L}_t(f(t))[s]$):
 $\text{solve}(\text{ans},Lp)|y'(0)=5|y(0)=1$

$$\left\{ Lp = \frac{s+4}{s^2-s+1} \right\}$$

3rd Find the Laplacian inverse:
 $y = \mathcal{L}_s^{-1} \left(\frac{s+4}{s^2-s+1} \right) [t]$

$$y = \cos\left(\frac{\sqrt{3} \cdot t}{2}\right) \cdot e^{\frac{t}{2}} + 3 \cdot \sqrt{3} \cdot \sin\left(\frac{\sqrt{3} \cdot t}{2}\right) \cdot e^{\frac{t}{2}}$$



Does $y''-y'+y=0$? ...Yes *jjjjj*

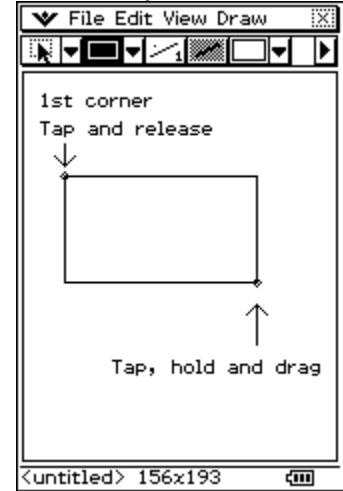
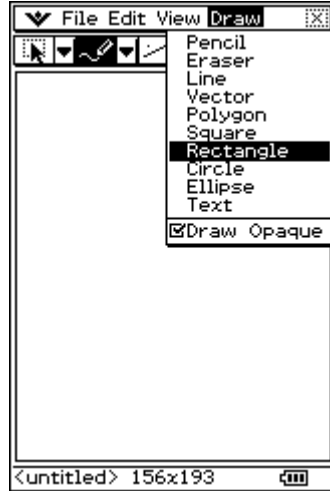
$\text{simplify}\left(\frac{d^2}{dt^2}\left(\cos\left(\frac{\sqrt{3} \cdot t}{2}\right) \cdot e^{\frac{t}{2}} + 3 \cdot \sqrt{3} \cdot \sin\left(\frac{\sqrt{3} \cdot t}{2}\right) \cdot e^{\frac{t}{2}}\right) - \frac{d}{dt}\left(\cos\left(\frac{\sqrt{3} \cdot t}{2}\right) \cdot e^{\frac{t}{2}} + 3 \cdot \sqrt{3} \cdot \sin\left(\frac{\sqrt{3} \cdot t}{2}\right) \cdot e^{\frac{t}{2}}\right) + \left(\cos\left(\frac{\sqrt{3} \cdot t}{2}\right) \cdot e^{\frac{t}{2}} + 3 \cdot \sqrt{3} \cdot \sin\left(\frac{\sqrt{3} \cdot t}{2}\right) \cdot e^{\frac{t}{2}}\right)\right)$

Using the Picture Application (PC only)



The handheld has a picture viewer available within eActivity

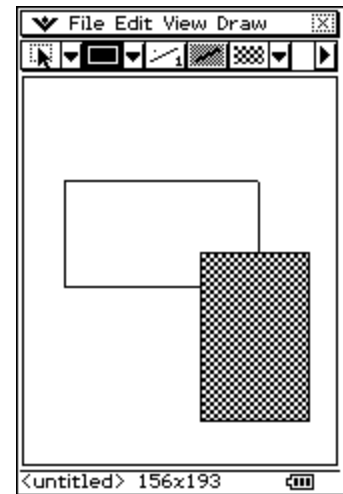
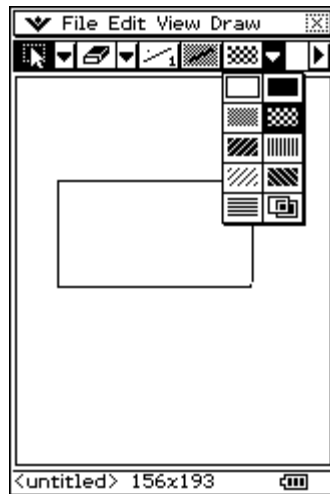
Drawing a Rectangle

- Tap  and then 
- Open the **Draw** menu and select **Rectangle**
- Tap** to create one corner point
- Tap again** and **drag**
- Release** when you are happy with your rectangle



Shading

- Tap the 3rd  on the toolbar and choose a shade type
- Draw another rectangle (you can tap the 2nd  and select the shape)
- Circle and ellipse shapes can be solid or transparent - experiment






Picture is Useful

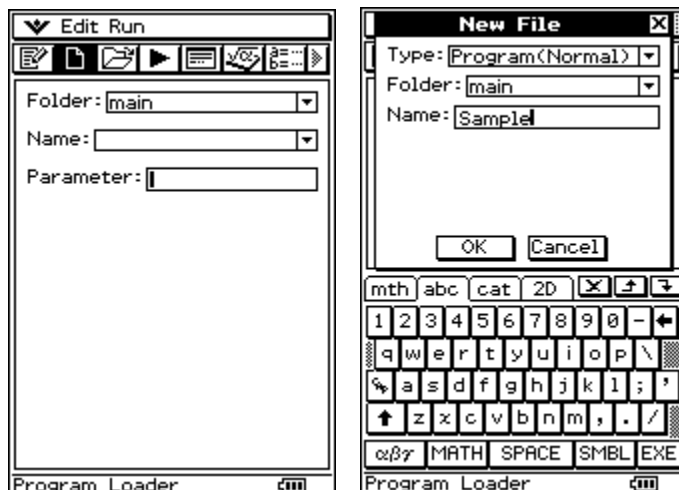
- Open Paint or a picture that you like in another application on your computer
- Select and copy** part of your picture or press HCopy copy a screen of your ClassPad
- If you have the *ClassPad Professional version*, right click and select *Resizable*
- Tap inside the **ClassPad Picture application**
- Right click** anywhere on the ClassPad and select **Paste Special**



Using the Program Application

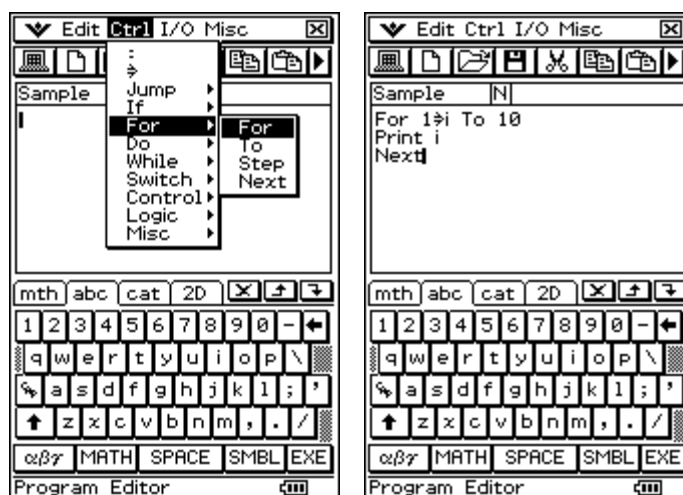
Naming a Program

- Tap  and then .
- Tap the  toolbar button
- Enter a name for your program
- Tap **OK**







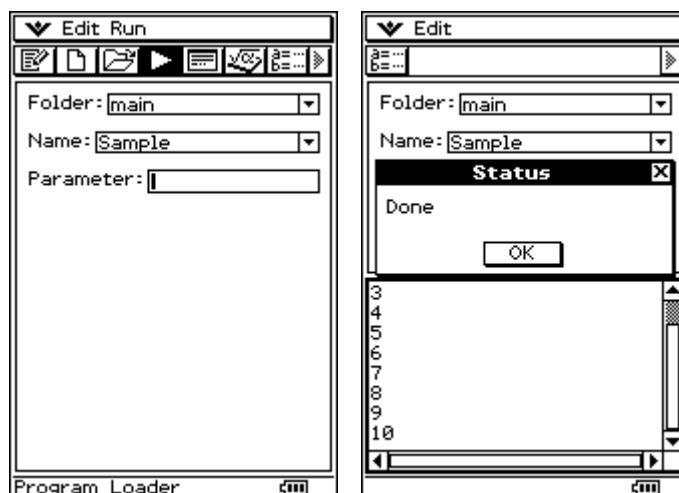
Entering Code

- Open the **Ctrl** menu
- Select **For ▶** and then **For**
- Continue to use the **Ctrl** menu to input remaining code for the loop
- You will find **Print** in the **I/O** menu under **Output**









Running your Program

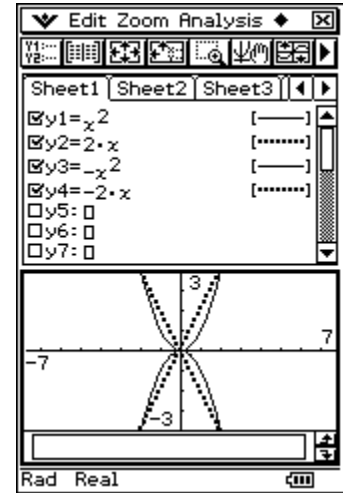
- Tap the  toolbar button
- Tap the  toolbar button
- Tap the  toolbar button
- Tap **OK**
- Tap in the **upper window** and select  to edit your program








Using the Presentation Application

Creating a Presentation

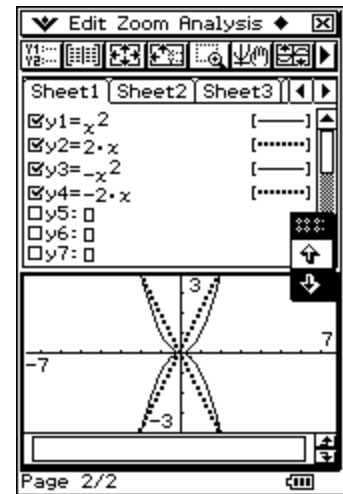
- Tap  and then  Presentati...
- Tap following **P1** and input a name
- Press **EXE**
- Tap  (notice 0 changes to 1)
- Tap  and then  Graph&Tab...
- Graph a few functions
- Tap  to store the picture (or press the F8 key on your computer)





Showing a Presentation

- Tap  and then  Presentati...
- Tap  on the toolbar to see your presentation play automatically
- Tap  to present one page (hardcopy) at a time
- Tap the  to advance to the next page

*You can save up to 60 pages per presentation





Ways to Show a Presentation

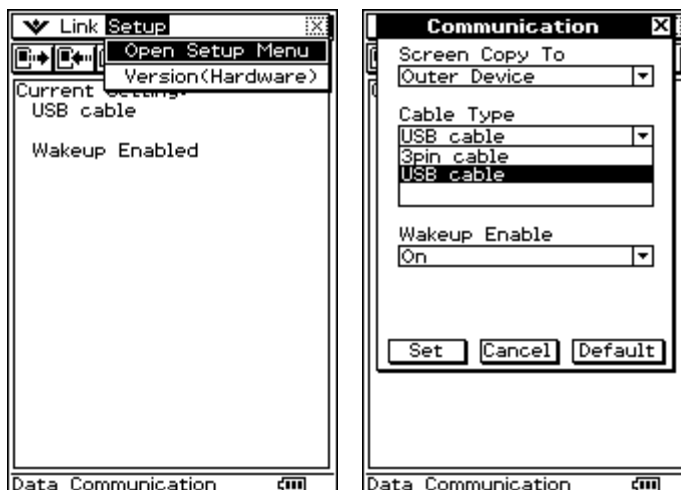
- Open the  menu
- Select **Presentation**
- Set the **Play Speed** (1 is fast and 10 is very slow!)
- Repeat
- Tap Set
- Tap  and then ESC or Clear to stop



Viewing the Communication Application

General Communication Info






- Tap  and then .
- “USB cable” is good! When you connect a handheld ClassPad to your PC, it will automatically go into standby mode for data transfer
- If you want to connect to another handheld ClassPad, you will need to change the **Cable Type** to **3pin cable**

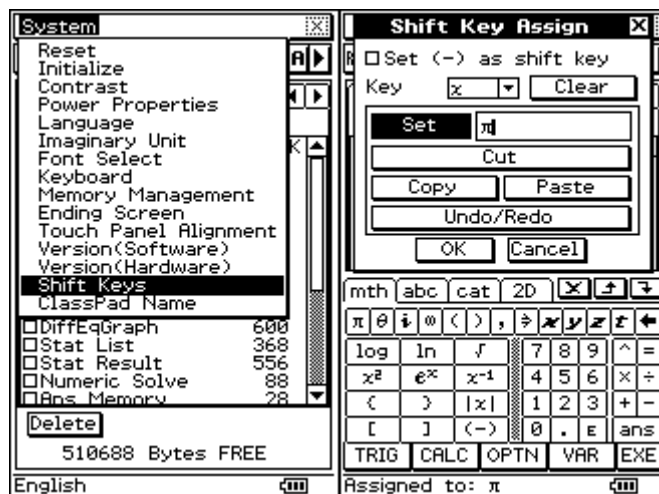


Please view the manual for additional information. Thanks!

Useful Features in the System Application



Defining Shift Keys

- Tap  and then .
- Open **System** menu and select **Shift Keys**
- the box to make the  act as a shift key
- Select a key from the dropdown list to assign a shift key to (I am using **x**)
- Tap in the box following 
- Open the keyboard and **input a value** (I am assigning π)
- Tap  to set the value
- Assign more keys or tap **OK**





Useful!

Using your Defined Shift Keys

- Tap  and then 
- Press the \ominus key and then \otimes
- You should get π !

Name your ClassPad (handheld only)

- Tap  and then 
- System/ClassPad Name**

