Graphical Times.
Volume 9, Issue 35, 2010.

Welcome back to the start of the winter term! We hope you have had a restful break and been able to read a few non-mathematical books. I have been trying to read the 2nd book in the series by Stieg Larsson (died 2004) and get it finished before the movie of the 3rd book hits the cinemas! We hope you enjoy the read in this newsletter.

What's in here!

Included in this terms newsletter are:

- **Calculator activities for the Classpad 330+ and Casio graphic calculator**
- **Worksheet for the Classpad 330 +: Differential equations and Geometrical construction and loci**
- **Worksheet for the FX9750GII and similar models: Tangents and Normals on the FX9750Gii model**
- **Term 3, 2010 pricing list.**

N.B. The Graphic Technologies Catalogue is available on request. Please email us @ graph.tech@xtra.co.nz, to receive your free copy.

GST rising to 15%.

The 1st October (term 4) signals a rise in pricing. Make the most of GST being 12.5% during term 3. That is a 20% increase in government revenue that we need to adjust our pricing for. We still intend to have the lowest pricing to support schools and provide opportunities to access great Casio products.

Workshop opportunities.

Workshop opportunities: These were run in June, and we will be heading back to Christchurch for a workshop early in September. Please register ASAP. If you would like to have a workshop for teachers and or students then please make contact with *Graphic Technologies*. A large number of schools are taking up this opportunity either singularly or as a cluster of schools with both the graphic calculator and the ClassPad330+, to look at how the graphic calculator and CAS could impact on and be integrated into your classroom practices. With the new features of the FX9750Gii illustrated later in this newsletter, an opportune time to consider booking a session.

Worksheets downloaded off the web.

Visit Monaco Corporation or Graphic Technologies website to view and download worksheets. There are links to other informative mathematics education websites too. For teachers we currently offer a large number of 'classroom ready' resources available and are designed primarily for the CASIO® FX9750Gii, FX9750G, FX9750G+, CFX9850GB, CFX9850GB+, CFX9850GC+ FX9750GA+ models of graphical calculators and the ALGEBRA 2.0. There is also a variety of activity sheets designed for the ClassPad300, 300+, 330A and 330A+ models. All of the activities and worksheets are designed for beginners to advanced users of the GC and CAS. More have been added to the website since the last newsletter.

Visit: www.monacocorp.co.nz/casio and http://graphic-technologies.co.nz.

Data projectors

We are pleased to have two NEW products added to our range of Casio products. These are Casio projectors models, namely the XJA130 and XJA145 models. These have been included on the term 3 pricing list.

Features Include

Data projector XJA130 **New product!**	$1900.00
Data projector XJA145 **New product!**	$2500.00

- Ecologically sound and energy saving.
- NEW mercury-free light source
- 2 x optical zoom
- Lamp-free technology with up to 20,000 hours continuous performance
- USB 2.0 for PC-free presentations [XJA145]
- WLAN capability
- The size of a ream of A4 paper! See the flyer with this mailout for our introductory offer:

Mathematics Department Cycle [Pass it on to . . .]

|	→		→		→		→		→	
	→		→		→		→		→	

The Differences Between the FX9750GII and the FX9750GA+, the Facts!
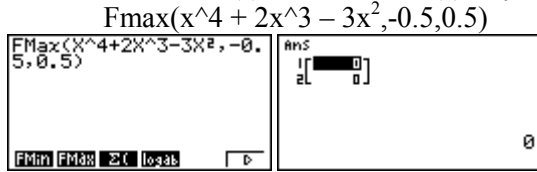
Specification of NEW fx-9860GII and NEW fx-9750GII	FX9750GII	FX9750GA+
Probability Function (ex : NormPD( )	X	
Advanced STAT function Test, Interval, Distribution, Probability	X	X
Numeric Derivative	X	X
Numeric Integration	X	X
Solve Integral function (in EQUA mode)	X	
Solve Probability function in EQUA mode	X	
REF/RREF function	X	
Xc < (Inequality) Graphing in GRAPH Mode	X	
Reduction (Simp.)	X	
Division with remainder (Int /)	X	
mod function (Remainder)	X	
MOD2 (for special calculus)	X	
Incorrect French Translation (in EQUA mode (simultaneous))	X	
Integral Graphing (in GRAPH mode)	X	
Complex number	X	X
View Window Setting (same as G85/G35)	X	X
Setting the Graph Type (Rectangle/Inequality)	X	X
Graph solve function (in GRAPH mode)/(Root, Min, Max, YICPT, YCAL, XCAL)	X	X
ISCT, Integration	X	X
Financial Application (TVM)	X	X
Additional Financial function Bond calculation, Depreciation	X	X
Equation (Simul / Poly)	X	X
Solver	X	X
Random Integer	X	
GCD (pgcd) / LCM (ppcm)	X	
Pie, Barchart (in STAT mode)	X	
Sequences (an/bn)	X	X
Sequences (cn)	X	
USB (PC-Link)	X	
Data Communication OH-9860/Screen Receiver Direct Connection	X	
Data Communication by 3-pin LINK (Data Communication)	X	X
Backup Battery		X
Apps RUNMAT	X	X
MATRIX function	X	X
Statistics	X	X
AP Statistics (Test/Interval/Probability)	X	X
Pie Chart/Bar Chart	X	
GRAPH	X	X
Dynamic Graph	X	X
TABLE	X	X
Recursion (Sequences)	X	X
CONICS	X	X
Equation (Simul/Poly/Solver)	X	X
Program	X	X
TVM (Financial)	X	X
Advanced TVM function (Bond/Depreciation)	X	
MEMORY	X	X
SYSTEM	X	X
ECON	X	
Available unique list name for computing STAT calculation	X	
Revise USB Data Communication setting	X	
Quick Start Guide (paper book)	X	X
CD-ROM	X	X

Finding turning points in the RUN-MAT icon.

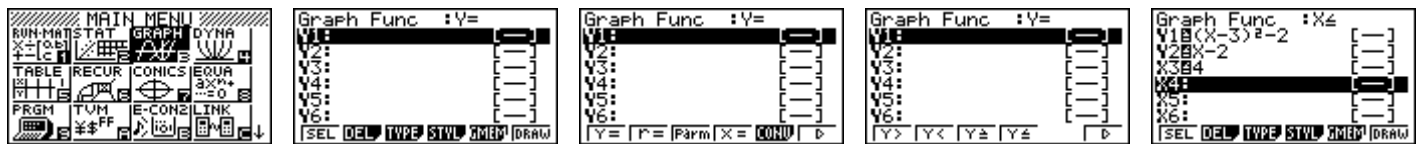FMin(equation, lower bound, upper bound) and FMax(equation, lower bound, upper bound)

[OPTN] **[F4]** **[F6] [F1]**
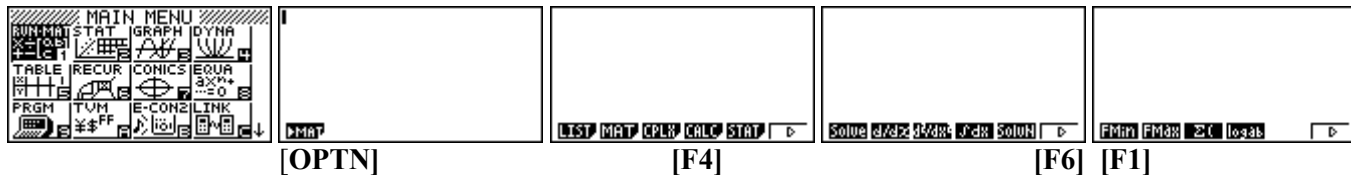
Find the maximum(s) and minimum(s) of $y = x^4 + 2x^3 - 3x^2$

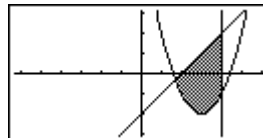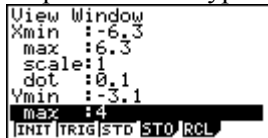Fmax(x^4 + 2x^3 – 3x², -0.5, 0.5)   Fmin(x^4 + 2x^3 – 3x², -1, 1)

Fmin(x^4 + 2x^3 – 3x², 0, 1)
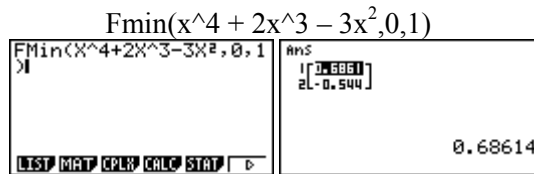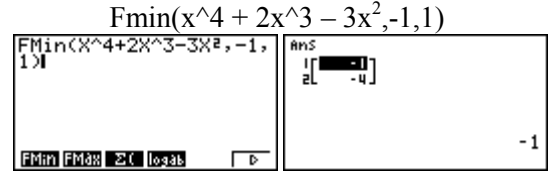
Graphing Inequalities in the GRAPH icon.

Graph the intersection of $y \geq (x-3)^2 - 2$ and $y \leq x - 2$ and $x \leq 4$

Select 'Type' **[F3] [F6]**, select Y≥ [F3]. Type in the expression $(x-3)^2 - 2$ in the Y1 space.
Repeat the process for 'Type and select Y≤ [F4]. Type in the expression $x - 2$ in the Y2 space.

Make sure the V-Window is appropriate.   Select DRAW **[F6].**

Solving Polynomial Equations without and with Complex Roots in the EQUA icon.

Solve $x^4 + 2x^3 - 3x^2 = 0$
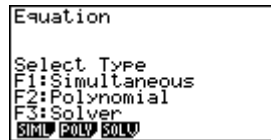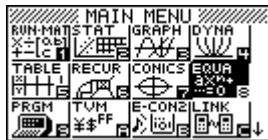
Enter Polynomial **[F2]**   Select degree = 4 **[F3].**
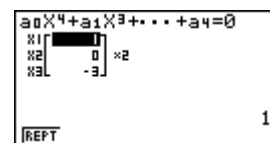
Enter the coefficients of this quartic: 1 **[EXE]** 2 **[EXE]** -3 **[EXE]** 0 **[EXE]** 0 **[EXE]** then **[F1]** solve.
Note that the roots at $x = 0$ has been indicated to be a double root with the '×2'

[SHIFT] [MENU] for SETUP.
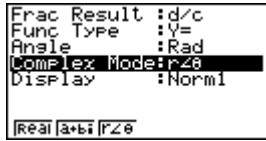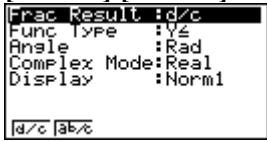
Solve $x^4 + x^3 + x^2 + x + 1 = 0$
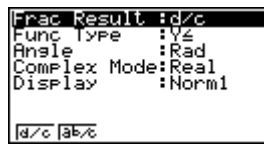
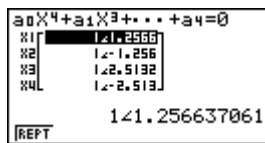Arrow down to the Complex mode, press [**F2**] for 'a+bi' format, then [**EXIT**].
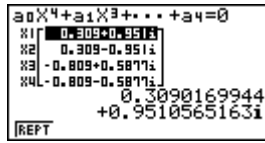
Press [**F1**] to SOLVe.

Results are displayed in the rectangular format [$(x + yi)$].
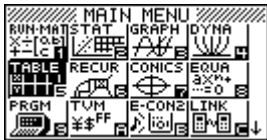
[**SHIFT**] [**MENU**] for SETUP.

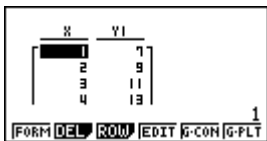Arrow down to the Complex mode, press [**F3**] for 'r∠θ' format, then [**EXIT**].

Press [**F1**] to SOLVe.

Results are displayed in the polar format. [r×cisθ]
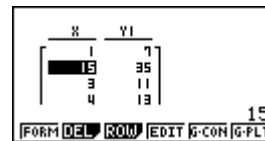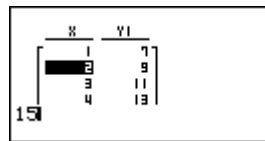
Table entries and features in the TABLE icon.

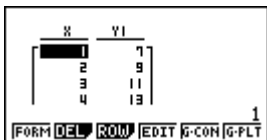Enter the function in the Y1 space, e.g. y = 2x + 5.   Enter SET [**F5**] to select the Start, End and Step values.
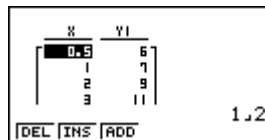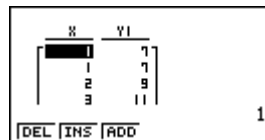
[**EXIT**] then [**F6**] for display of the table values.   You can overtype an x-value the press [**EXE**] to activate the new calculation.

New values can be inserted without   Press the down arrow to where you want
overwriting pre-determined x-values.   to insert a new x-value, press [**F3**] for ROW and the
[**F2**] for INSert. This creates a duplicate of the current row.
Alter the x-value as desired.

[**Note:** Entering fractions using the [**a^b/_c**] button will be displayed as
decimals in the x-value column BUT displayed as fractions on the RHS
display area of the screen.]
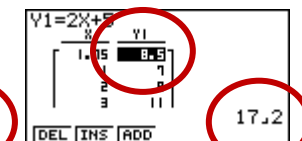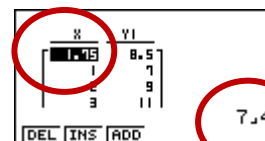
You are able to plot the points that you have generated in the Table format. Make sure that you have an appropriate domain
and range in the V-Window. Press [**F6**] for G-PloT.

Enter [**SHIFT**] [**MENU**] for SETUP. And scroll down to 'Dual Screen' and select [**F1**] T+G [**EXIT**].
[**F6**] for TABLe and [**F6**] for G-PloT to display both formats.
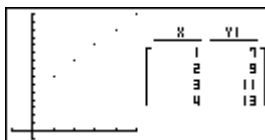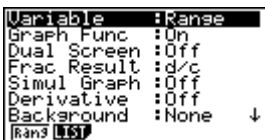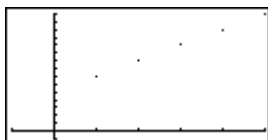
You can display a mixture of rectangular, parametric and polar equations in both the **TABLE** and **GRAPH** icons.

Inverse Binomial and Poisson calculations in the STAT icon.

A new feature to the FX9750Gii model.
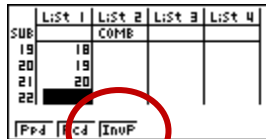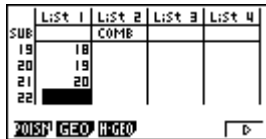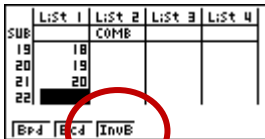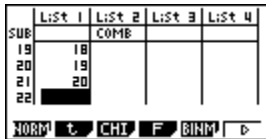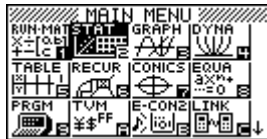
Explore and enjoy!

An interesting discovery!

$$\frac{d}{dx}(x^r) = (e^{(r\ln x)}), = e^{(r\ln x)}(e^{(r\ln x)})' = x^r (r/x) = rx^{(r-1)}$$

For some videos on UTube form MIT visit:

http://www.youtube.com/watch?v=jbIQW0gkgxo&feature=channel
http://www.youtube.com/watch?v=eHJuAByQf5A&feature=related

EA-200 Data logger and EA-2 Motion Sensor.

These have been very popular and we have only 6 of each left. These can connect to the graphic calculator (or ClassPad) and we are offering a 63% saving purchasing these accessories singularly or a huge 69% discount on these two accessories when purchased together (While stocks last, so be quick!). The EA200 can connect up to 7 graphic calculators (or ClassPad) for data transfer from probes and motion sensor.

[N.B. Both of these models have a RRP of $799.00 each.]

EA-2 CASIO MOTION SENSOR	EA200 CASIO DATA LOGGER
Emits Ultrasonic pulses	Data Analyser
Detects Pulses returned	Includes Temperature, Optical and Voltage Probe
Can connect to EA200	Data collection at up to 50,000 points per second

	EA-200 Data Logger	EA- 2 Motion Sensor	Both units
Product			
Price (exclusive GST) per unit	$300.00	$300.00	$500.00

A problem to finish on!

Players 1, 2, 3, …, n are seated around a table and each has a single coin. Player 1 passes a coin to Player 2, who then passes two coins to Player 3. Player 3 then passes one coin to Player 4, who passes two coins to Player 5, and so on, players alternately passing one coin or two to the next player who still has some coins. A player who runs out of coins drops out of the game and leaves the table. Find the set of numbers n for which the nth player ends up with all n coins.

A last word!

Well again, that's all I can fit onto the 4 pages! Enjoy the 'Winter' term! Hope to see you at some workshops or hear from you via this newsletter or otherwise! If you would like to contribute or have suggestions as to what you would like to have discussed via this medium, please do not hesitate to contact us either by snail - mail, email, website, telephone, text or fax.

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