# Graphical Times.
Volume 8, Issue 29, 2009.

Welcome back to school! Hope that you have had an enjoyable summer break, the weather has been good to you, the mathematics and statistics books have a little dust on them and you have only just begun to think about day 1, spell 1! This year brings us NZAMT11 in Palmerston North, **"Pi in the Sky: Extending Mathematical Horizons"** see http://www.nzamt.org.nz/nzamt11/ and http://www.nzamt11.co.nz/page.php?1. Visit these websites regularly for updates in preparation for this conference.

We have a new LOGO and a website [http://graphic-technologies.co.nz].We will continue to build upon the resources that are already housed on the website with small segments of video support in using the graphic and CAS calculators, the EA200 and motion sensor to name a few. You can purchase from this website and make contact with us too!
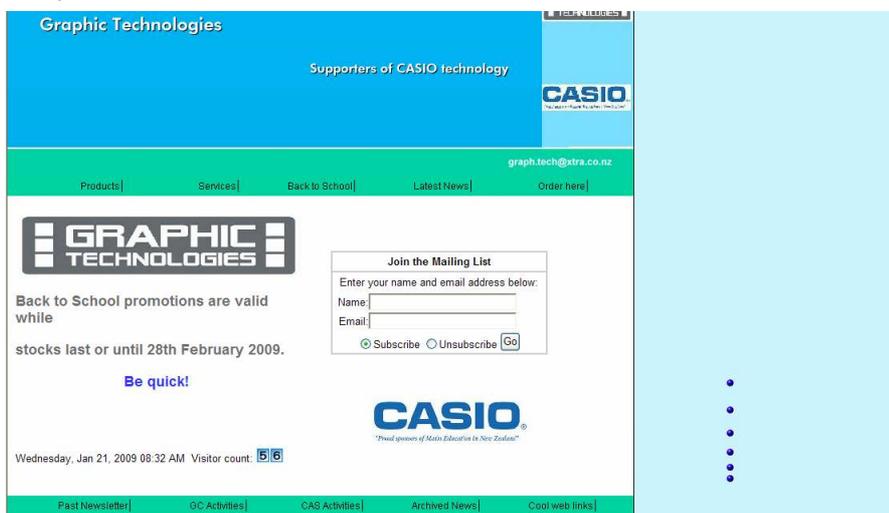
The first 25 schools to purchase via the website will receive an 'extra something' in their order.

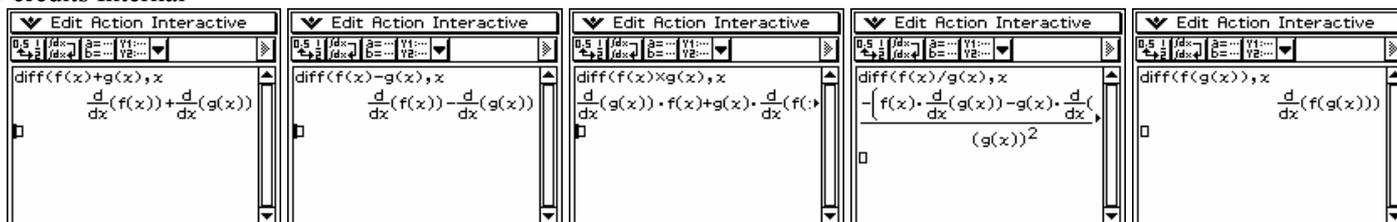## Level 3 CAS Achievement Standards.

These have now been posted on the NZQA website.

CAS Calculus 3.1 90833 Demonstrate an understanding of calculus concepts when solving differentiation and integration problems 7 credits External

CAS Calculus 3.2 90834 Demonstrate an understanding of equations and expressions when solving problems 7 credits External

CAS Calculus 3.3 90835 Demonstrate an understanding of patterns and relationships when solving problems 5 credits External

CAS Calculus 3.4 90836 Demonstrate an understanding of mathematical concepts without the use of electronic technology 5 credits Internal

See: http://www.nzqa.govt.nz/ncea/assessment/search.do?query=mathe&view=achievements&level=03 to view the Achievement Standard and Achievement Standard Specifications. Particularly the **General Explanatory Notes.**

Looking forward in seeing the exemplars questions for these new Achievement Standards when they are posted on the NZQA site.

The existing Statistics and Modelling Achievement Standards will be open to CAS candidates as they are now. There will be no new Statistics and Modelling CAS Achievement Standards. It was said the review panel felt that there would be no more advantage from the CAS calculators in these standards than from other permitted calculators. The examining panel is to note this in the assessment specifications as an update. **This means that any candidate in the Level 3 Statistics and Modelling Internal and External Assessments can use a CAS calculator if they wish to.**

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

	→		→		→		→		→	
	→		→		→		→		→	

What's in here!

Included in this terms newsletter are:

- Calculator activities – Classpad 300 - Amimating on the Classpad 300 to illustrate tangents to curve.
- Worksheets for: Classpad 300 – Algebra Art
  Graphic calculator – Spotting the patterns
- Term 1 pricing list
- 'Back to Skool' promotions This has NOW been EXTENDED!(Concluding 13th March 2009)
- Graphic Technologies Catalogue are also included in this newsletter and mail-out.

Specials for Term 1 and 'Back to skool' promotions.
Please note that these promotions are valid until the 13th March 2009.

Graphic Technologies has been able to hold the pricing down for this year BUT unfortunately after the 'Back to skool' offers are finished the pricing will be adjusted to reflect the pricing markets that has seen other suppliers raise the pricing. As an indication for the FX9750G+, this will be set at $69+GST from March 2009. So **PLEASE** take this opportunity of the term 4 and back to school specials to make some great savings. **Extracts from the 'Back to Skool' flyer below.**
FX9750G+ Graphic calculator: Buy 19 and get 1 free. An example: Purchase 95 units @ $67.00+GST and receive 5 units free.
FX82MS Scientific calculator:

FX82 MS scientific calculator (Minimum order is 10) Please specify which model is required (circle): FX82BU or FX82	10 - 30	$15.00
	31 - 50	$14.75
	51 - 100	$14.50
	101 - 200	$14.25
	200 +	$14.00

Classpad 300+ CAS calculator: Purchase a class set of 30 units - $4500 + GST. ($150 + GST per unit) and receive free, the FACP330B, School License worth $879.00 RRP.

ClassPad 300+	1 - 2	$180.00
	3 - 5	$170.00
Graphic Technologies wants you to get your hands on one!	6 - 10	$165.00
	11 - 29	$160.00
SPECIAL: Receive a free FACP330B – School License worth $879.00, with the class set purchase.	Class set of 30 special	$4500.00

All pricing is valid until 13th march 2009, see the attached flyer to this mailout.

Newsflash! Introducing the FX991ES

Graphic Technologies is New Zealands' sole reseller. A brand new item! This calculator has 'Natural Textbook display' **Not available in retail shops**.
A NON-PROGRAMMABLE calculator **It is allowable and recommended for Cambridge Examinations**!

Two Way Power	9 Memories (Memory Protection
Intergration/Differential	Equation Calculation
CALC Function / SOLVE Function	Base-n calculation
Vector Calculations	Combination and Permutation
Standard Deviation (Paired Variable)	Regression Analysis
Logical Operations	Table Function
Exponential display	40 metric conversions (20 conversion pairs)
Answer Function	Multi-statements
Auto Off	Fraction Calculations
Complex Number Calculation	Matrix Calculations
Logarithm Log.□	STAT Data Editor
40 scientific constants	Replay Function
Error Recovery	**See the Pricing list and catalogue for more details.**

Back up batteries [CR2032 Lithium].

The graphic calculators have a back up battery to save data if the 4 AAA batteries fail. These have a life span of 2-4 years. It is good practice to replace these rather than wait for them to fail also, particularly if you operate class sets or hire them out to students for the academic year. *Graphic Technologies* sell these batteries and will have a special pricing operating term 1 for bulk orders. The usual price is $3.50 each, but with orders of: **10+ will be $3.25 each: 20+ will be $3.10 each: 50+ will be $3.00 each**

Workshop opportunities.

Workshop opportunities, 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 or with the ClassPad300, to look at how the graphic calculator and CAS could impact on and be integrated into your classroom practices

Worksheets downloaded off the web.

Visit Monaco Corporation's website to view and download the worksheets. There are links to other informative mathematics education websites too. For teachers we currently offer a large number of 'classroom ready' resources available are designed primarily for the CASIO® FX9750G, FX9750G+, CFX9850GB, CFX9850GB+, CFX9850GC+ models of graphical calculators and the ALGEBRA 2.0. There is also a variety of activity sheets designed for the ClassPad 300 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 graphic-technologies.co.nz .

Websites of mathematical interest.

http://www.mathtv.com/ maths and algebra help via short video clips.

http://www.casio.edu.shriro.com.au/downloads/classpad_download.php Classpad 300 support in getting started. Basics through to activities in algebra, geometry, probability and a selection of eActivities

http://www.classpad.com.au/index.html **Classpad Help Series of videos** Classpad Help Series - a resource for both students and teachers. Help sheets can be found in the Basic section or Intermediate and Advanced sections.

http://www.quizyourprofile.com/guessyournumber.swf Nice!

http://lib.stat.cmu.edu/DASL/ **DASL** (pronounced "dazzle") is an online library of datafiles and stories that illustrate the use of basic statistics methods. Find real-world examples that will be interesting to students or use DASL's search engine to locate a story or data files of interest.

Some very good reads on statistics below.

The International Association for Statistical Education and the International Statistical Institute, together with co-editors Peter Petocz and Tom Short, are pleased to announce the publication of a new issue of the Statistics Education Research Journal (SERJ). SERJ Volume 7, Number 2 CONTENTS

Allan J. Rossman (Invited) Reasoning about Informal Statistical Inference: A Statistician's View http://www.stat.auckland.ac.nz/~iase/serj/SERJ7(2)_Rossman.pdf

Ruth Beyth-Marom, Fiona Fidler, and Geoff Cumming Statistical Cognition: Towards Evidence-Based Practice in Statistics and Statistics Education http://www.stat.auckland.ac.nz/~iase/serj/SERJ7(2)_Beyth-Maron.pdf

Andrew Zieffler, Joan Garfield, Robert delMas, and Chris Reading A Framework to Support Research on Informal Inferential Reasoning http://www.stat.auckland.ac.nz/~iase/serj/SERJ7(2)_Zieffler.pdf

Jane M. Watson Exploring Beginning Inference With Novice Grade 7 Students http://www.stat.auckland.ac.nz/~iase/serj/SERJ7(2)_Watson.pdf

Efi Paparistodemou and Maria Meletiou-Mavrotheris Developing Young Students' Informal Inference Skills in Data Analysis http://www.stat.auckland.ac.nz/~iase/serj/SERJ7(2)_Paparistodemou.pdf

Dave Pratt, Peter Johnston-Wilder, Janet Ainley, and John Mason Local and Global Thinking in Statistical Inference http://www.stat.auckland.ac.nz/~iase/serj/SERJ7(2)_Pratt.pdf

Arthur Bakker, Phillip Kent, Jan Derry, Richard Noss, and Celia Hoyles Statistical Inference at Work: Statistical Process Control as an Example http://www.stat.auckland.ac.nz/~iase/serj/SERJ7(2)_Bakker.pdf

Conferences http://www.stat.auckland.ac.nz/~iase/serj/SERJ7(2)_conferences.pdf

Infoshare provides you with online access to a wide range of time series data. This web-based tool can be used to access, view, and download the most up-to-date information from the largest directly accessible database of official statistics in New Zealand, and select data specific to your needs or interests. Infoshare is free to use.

http://www.stats.govt.nz/infoshare/database/SNZ/databaseSearch.asp
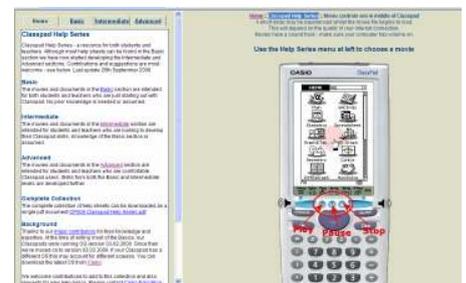
CASIO Support Classroom E-mail News, What's New.

Classroom E-mail News: http://edu.casio.com/edu_mail/
CASIO Worldwide Education Website: http://edu.casio.com
Information about the **ClassPad**: http://edu.casio.com/products/classpad/
Visit: http://edu.casio.com/use/ for video assistance support to operating your **Classpad300** in the **Main** and **Geometry** icons, and guidance **in e-Activities**.

Problem! Find all the n such that the sum 1! + 2! + ... + n! is a perfect square. (For example, it's not true for 5 - the sum 1! + 2! + 3! + 4! + 5! = 1 + 2 + 6 + 24 + 120 = 153 is not a perfect square.)
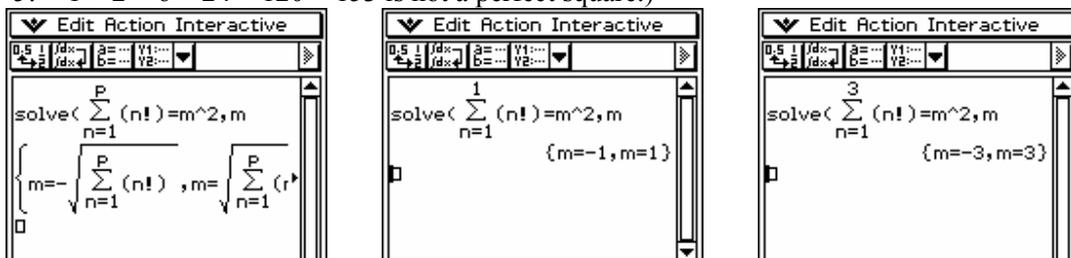
But why are these values the only values?

FA-123 software.

Wanting to make your own worksheets to emphasize a particular aspect on the graphical calculator? **The Program Link - Connecting Computers and the Casio Calculators.**
Making up a worksheet to use in the classroom or having students send and receive data
from calculator to calculator or calculator to computer. A number of schools now have the Program-Link software and cabling. Some computer classes are using them in their year 12 and 13 computer courses and others are using them to download programs etc from the **Internet**. These are available from Graphic Technologies and there is **NO Site Licence** required. The SB-67 cabling is required (see term 4 pricing list and ordering form. The software can be downloaded free from: http://world.casio.com/edu/resources/fa123/

If you are not able to open the XXX.CAT file, this is because Microsoft use the suffix .cat for Security Catalogue files.

- Open **My Computer**
- Go to the **View** menu and select **Folder Options**
- Click the **File Type** tab
- Find the **Security Catalogue** option, highlight it and click **Edit**
- Change the **Description** to FA-123
- Under **Action**, highlight **open**
- Click **Edit.** Now click **Browse** and find the **FA-123.EXE** file on your computer, the file pathway is likely to be **c:\Fa123\FA123.EXE**
- Click **Change Icon** and select the icon of your choice
- Click **OK** and then **OK** again

Classroom Activities.

Technology:
To create an animation of a single point on a single path both must be selected. The path must consist of one of either be a line segment, circle, arc of a circle, ellipse or a function.

Example: Draw a circle. Add a tangent line to the circle. Select the circle and C, the point of tangency. Tap **Edit**, tap **Animate**, tap **Add Animation**.
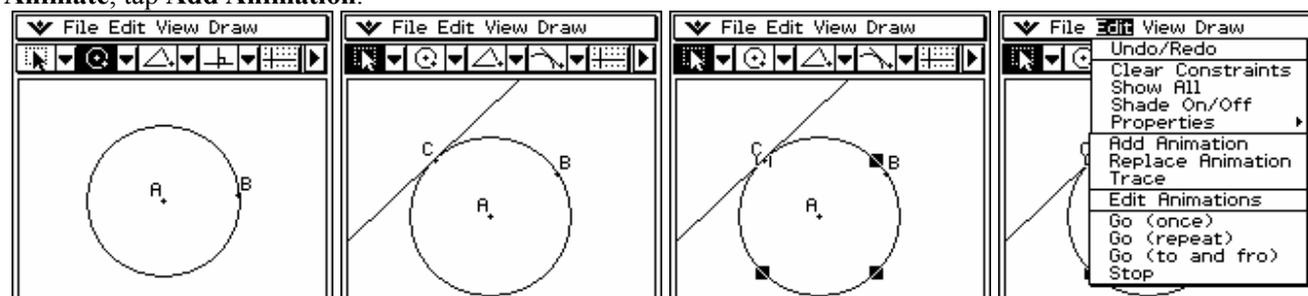
Now, tap **Edit**, tap **Animate**, tap **Go (once)**.
Below are some screen snaps of what you will see.
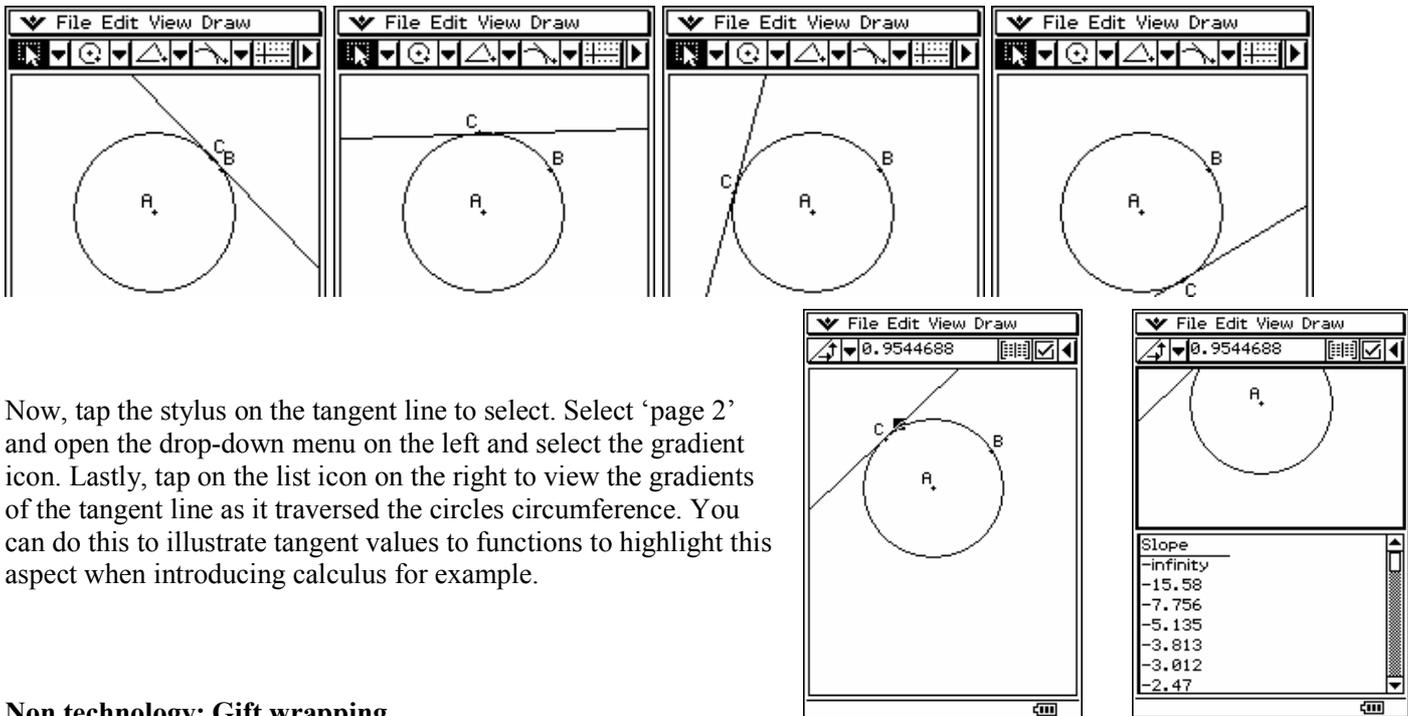
Now, tap the stylus on the tangent line to select. Select 'page 2' and open the drop-down menu on the left and select the gradient icon. Lastly, tap on the list icon on the right to view the gradients of the tangent line as it traversed the circles circumference. You can do this to illustrate tangent values to functions to highlight this aspect when introducing calculus for example.

Non technology: Gift wrapping
You have a perfect cube with a side length of 20cm. You have a square piece of paper that is 60cm on each side. You wish to wrap the cube with this paper, with no gaps or overlaps with only one shape cut out of the paper. Your shape must be one continuous piece of paper and cannot consist of shapes connected only corners (e.g., you cannot have two squares which touch only at a corner). A solution is posted below (no peeking!).

Help Desk.

Questions: I have a query in regards to FX9750G+. We have been studying Trig equations and have noticed a spurious problem with the GC in regards to finding simple solutions for graphs such as y = sin x. If you use GSOLV from the Graphs menu and attempt to find the solution when x = 90 deg, the GC sometime advises that there is no solution. This error only occurs sporadically. Is there a known problem with this? Also a student is trying to solve tan x = 8.94 ÷ 0.55. On the GC, using EQUA then the Solver function. I teach all my level 1 trig using this function and avoid the sin^{-1} method the FX82MS requires. We are in DEG mode and I get them to enter x = 90 whenever they solve a trig equation so when they are finding an angle the answer is always between 0 and 90 degrees BUT when we type in E.g. tan X = 8.94 ÷ 0.55 x = 90 And hit F6 to solve it we keep getting 266.5 deg on the display. Instead of the correct answer of 86.5 deg.
No matter what I try, the solver hits this answer (in the third quadrant) and not the one required 86.5 (in the first). I have not come across this problem before.

Response: Using the G-Solve feature to solve trigonometric equations (and any other function) requires the domain to be 'visible' as the calculator uses the Newton-Raphson method. As you know sometimes this method does not work particularly if the next approximation 'hit' an asymptote or a turning point. Just make sure that there is ample domain in the View-window. I am surprised that you are using EQUA for solving a multiple answer problem!
As you know sometimes this method does not work particularly if the next approximation 'hit' an asymptote or a turning point. Here you are starting on an asymptote! I would encourage the use of GRAPH and then using the G-Solve feature to solve trigonometric equations (and any other function) requires the domain to be 'visible' on the calculator screen
Just make sure that there is ample domain in the View-window.

A last word!

Well again, that's all I can fit onto the 5 pages! Have a great term 1! Hope to see you at some workshops or next term 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 either by snail - mail, email, website, telephone, text or fax.
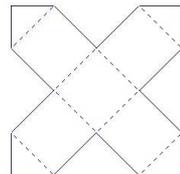
Derek Smith
Graphic Technologies
73 Viewmont Drive
Lower Hutt

Would you like to receive
this mailout electronically?
Please email your request to:
graph.tech@xtra.co.nz

Phone: (04) 569 1686   Fax: (04) 569 1687   Mobile: 027 460 2871   Website: graphic-technologies.co.nz