Creating Animated GIFs for Classroom Use: the Sequel

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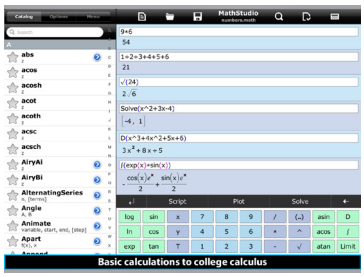
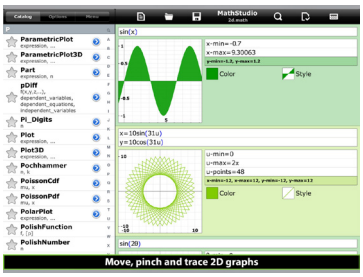
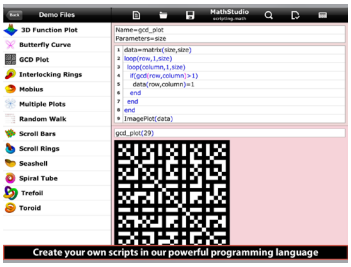
At the beginning of my talk, I focused on two apps from a developer/Chris DeSalvo (Pomegranate Apps) I know through the Apple AppStore. I first came upon Chris' products by means of the app formerly called SpaceTime. I had just recently purchased an iPad and wondered why nobody had created a CAS app for this environment, since it seemed like the perfect medium for such a tool. I was then directed to Chris' SpaceTime app and immediately was hooked. I had used other tools (TI-89 PLUS, Mathematics, etc.) but nothing as simple/easy and as inexpensive as his app was to be found. As I explored more and more with this app, I soon became a "product evangelist" for it with whomever would listen. Very seldom could you direct someone to a product that had all of the features of a TI-89 (and a whole bunch more!) as well as most of the features of Mathematica, but yet in a portable format and for a price less than $20!

Chris has subsequently spent a lot of time refining the user interface, adding features and has currently got one of the nicest CAS systems available. He has renamed the app, it is now more aptly called MathStudio, and can be found in the Apple and Android AppStores. Here are some views of what this very powerful app has to offer:



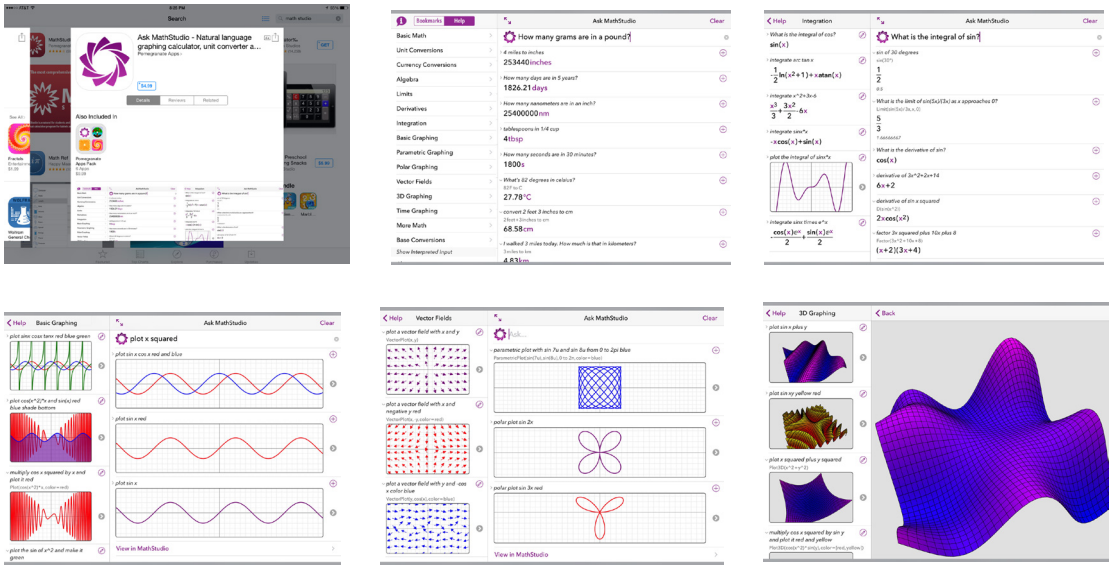




You can take derivatives, anti-derivtives, limits, solve some differential equations, graph functions, surfaces…and so much more! I highly recommend checking out MathStudio by Pomegranate Apps!

When I had contacted Chris to let him know I'd be talking about his MathStudio app, he introduced me to one of his brand new apps which is a natural language graphing calculator, called Ask MathStudio. I am not nearly as familiar with this new app, but the

product looks great and seems to have many of the same features but commands are entered in a more "natural" format/context. Here is a brief look at what Ask MathStudio has to offer:

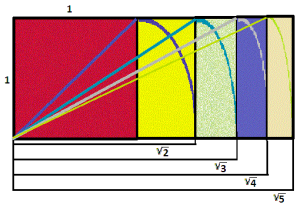


I don't think you can go wrong with either app, it is just more whichever suits your personal needs or preferences…but I highly recommend checking them out, and I know Chris is always open to your questions, comments and ideas to improve his products!

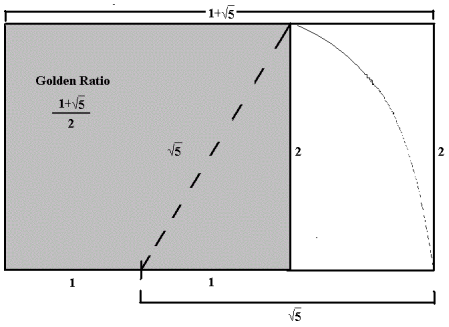
The focus of my talk then shifted to the topic of animated GIFs and a method for their creation. There are probably many different ways that one can create animated GIFs, useful for demonstration and instruction, but as is the focus with much of what I try to do…I sought out a FREE solution, that would also be easy to follow. But first, why would I have a need to create animated GIFs in the first place? I had a colleague who wanted to do a project for publication, focusing on geometry of the ancient Maya people but she didn't have a nice way to put her ideas/thoughts into action. Once she explained to me exactly the sorts of things she hoped to do, I sought out the advice of friends that I have in the field. I was told that "animated GIFs" would probably get everything accomplished and be pretty easy to implement…I soon became a huge fan.

Within our collaborations, we had many ideas that I crafted into animated GIFs and some of these included:

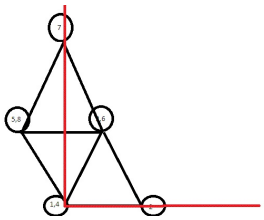
An animation to show how the irrationals could be constructed:



One that demonstrated the golden ration:



And another, which was the original focus of our efforts, was an animation that showed how the ancient Maya verified a right angle. They would have a ceremonial piece of rope with eight equally-spaced knots (2 on either end, and 6 others which separate the rope into 7 segments of equal length) and form a series of "stacked" equilateral triangles. Through a little geometry you understand the verification of a right angle is achieved.



Each of the animated GIFs, as well as others, and many interesting facts about ancient Maya geometry can be found in our article which was published in the MAA journal, Convergence at: http://www.maa.org/publications/periodicals/convergence/maya-geometry-in-the-classroom-special-ratios-in-maya-architecture

Also, one of the most creative ideas I had in the entire process was to have some student volunteers "act out" the motions in this animation so they could truly be a part of this ancient verification process! This was a bunch of fun, and I highly recommend you trying this (or similar projects) with your students! This video was recorded and uploaded to YouTube, and can be viewed at: *http://youtu.be/n8G0knuX3mE*

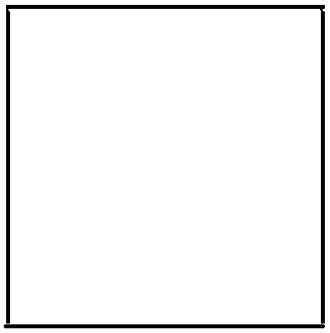
In order to create animated GIFs like these on your own, you just need access to some very simple programs; the most critical being GIMP 2.8 which is FREE!

I. **Getting Started -** Necessary programs

a. **Microsoft PAINT (to draw the frames)**
b. **GIMP 2.8 (or this can be used for all parts)**
   Download for free at: **www.gimp.org**

II. Example

Create an "Animated Box"



a. **Create individual gif files using MS Paint**
b. **Create directory** *C:/box*
c. **At each stage (side of the square), save as** *file.gif* **in** *C:/box*
d. **Use previous *frame* to construct the next**
e. **Import the files into GIMP**
    i. **Select** *import as frames*
    ii. **Choose all files in** *C:/box*
f. **Select** *Filters*
g. **Select** *Animation… Playback*
h. **Select** *FILE…Export as gif***…**
    i. **Name:** *box.gif…*
    ii. **Click** *Export…*
    iii. **Check** *As Animation*
    iv. **Check** *Loop Forever*
    v. **Delay:** *350 milliseconds*
    vi. **Select** *Export …* **Close All**
i. ***Go to WindowsExplorer and view animated gif!***

III. Explore…*have fun!!!*