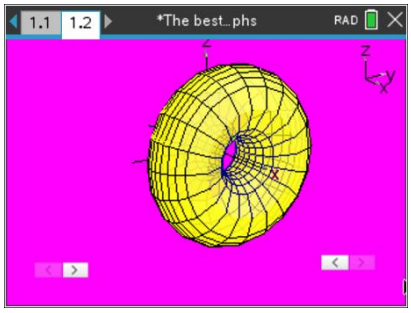
Building Inspirations

What makes TI-nspire™ so powerful? It's unique document structure provides a world of pedagogical opportunities to help students move from button pressing to connecting neurons. Most calculators are answer driven. The TI-nspire eco-system is designed to focus on understanding and opportunities. From the wireless connectivity of TI-navigator to connected devices like drones, robotic vehicles and Micro:bits™, TI-nspire supports both virtual and real world learning environments. The focus of this Building Inspirations session is on building the virtual environment.

There are numerous functions and tools that have been designed specifically to build virtual environments. Some things are intuitively incorporated such as dynamic graphs, the ability to simply grab and move, other features are tucked away such as conditional formatting, the ability to make things appear and disappear. You will find lots of examples of these on the Texas Instruments Australia website.

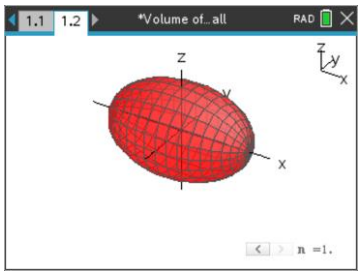
The example shown here creates a simple interface where students can quickly and easily rotate a function around the x or y axis. As the activity focuses on understanding, there is also an option to progressively rotate the function around the selected axis so students can see how it is formed. Other examples on the website include the common "box volume" problem where: "Corners are cut from a piece of cardboard and folded into a box, what is the maximum volume." In this activity students manipulate the size of the corner cut-outs, see the 3D box and automatically generate a data set for the different sized cuts and corresponding box volumes. Students create and check their equation by carefully studying the animated cuts, box volume and the corresponding data.



It is wonderful to have all these ready-built activities, but some teachers would like to build similar visuals themselves, or customise them to focus on the specific needs of their students. The ideas, activities, instructions and tutorials in this document are designed to help teachers on that journey. Selected activities will be covered in the workshop, however the QR codes lead to video tutorials that will also take you through the process, step by step.

Create an interactive Solid of Revolution

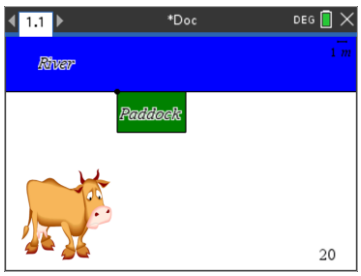
- » Rotations about the x axis
- » Rotations about the y axis
- » Toggle between the two rotations
- » Make a tasty donut.



https://youtu.be/hLv1b0pwSJA

What is the Maximum Area of a Paddock?

- » Create an interactive diagram (Geometry App)
- » Fixed perimeter (boarded by a river)
- » Automatically capture paddock dimensions and area



https://youtu.be/y4FSzZUhriM

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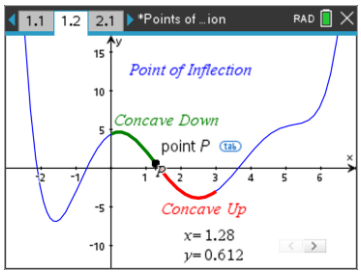
http://education.ti.com/australia

Texas Instruments

Appear and Disappear – Conditional Formatting

» Create a point and link the coordinates to a variable

» Use conditional formatting to make the object appear or disappear based on the value of a variable

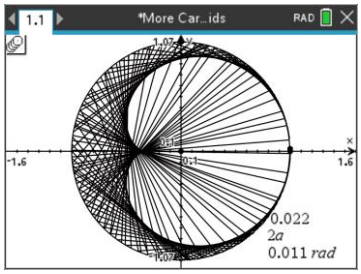


https://youtu.be/YZngBPdyAUc

Create a Cardioid – Using Geometry

» Clever use of the Point by Coordinates tool

» Using the Geometry Trace

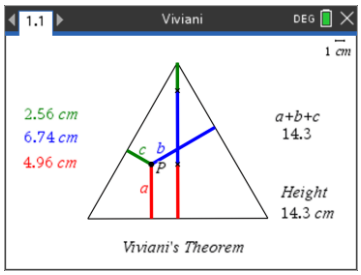


https://youtu.be/pWPvSYmOoVU

Hidden Calculations – Geometry & Graphs

» Calculations that automatically update

» Viviani's Theorem



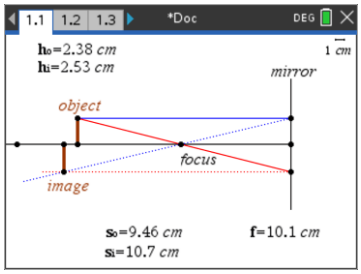
https://youtu.be/4ltGRSc424Q

Create an Interactive, Data collecting environment

» Context: Ray tracing diagram

» Name and store variables

» Capture variables



https://youtu.be/WZjiidPZobg

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