ARCHIMEDEAN SPIRALS

Teacher Norma Lisa Neiman (IT)

ARCHIMEDEAN SPIRALS WITH EXCEL

LESSON PLAN: 9th grade Students - 13-14 years old

SUBJECT: embedding circular functions to spirals

LESSON IDEA Archimedean Spiral
https://en.wikipedia.org/wiki/Archimedean_spiral

AIMS:

- Development cross curriculum with IT
- Understanding Circular functions
- In-depth understanding of Math
- Understanding Sequences
- Developing and using Spreadsheets (Excel)
- Reasoning on Archimedean Spiral property
- Using circular functions and arithmetic spiral with Excel to create an art outcome

PROCESS:

1. We investigated the circular functions angles in degrees and radiants, functions of y=cosx and y= sin (x)
2. In the Lab we analyzed how to build a sequence, elements of formulas, locked cells, copying columns, and rows, creating formulas, set up a set of coordinates and insert a scatter plot.
3. We investigated the Archimedean Spiral with Excel.
4. The students uploaded their work on easyclass at the end of their assignment
5. The teacher prepared a video tutorial and the students prepared other video tutorials too.

Video Tutorial –
First video tutorial

Prepared by the teacher Norma Lisa Neiman

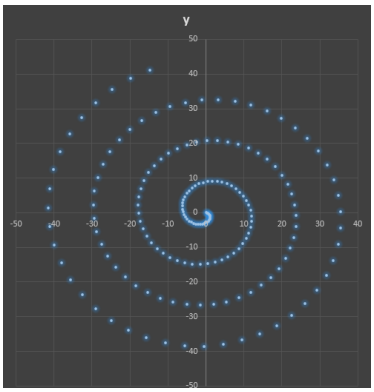
https://youtu.be/MJjbT1Sighk

OUTCOMES from the First Tutorial

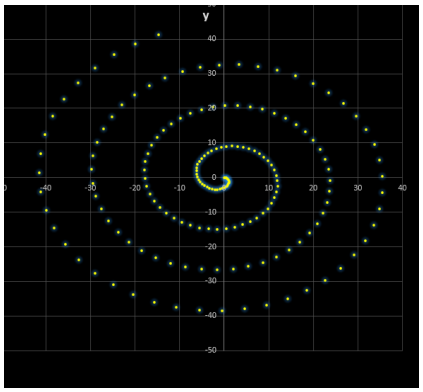
Archimedean Spiral with Excel

Let's represent the Archimedean Spiral through Excel. The Archimedean Spiral has $r=a+b\theta$. If a=0 then $r=b\theta$. Supposed b=0.01 and θ=0.01 step 25 $\theta=\{0.01,25.01,50.01,\dots\}$ and $x=r\cos\theta$, $y=r\sin\theta$

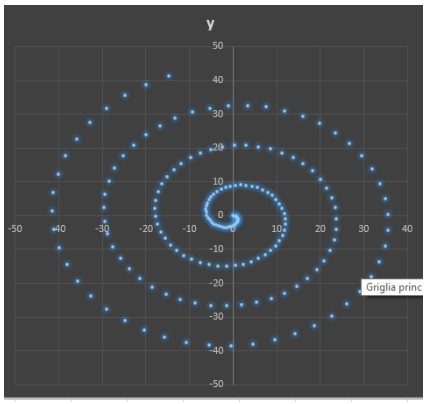
Edoardo Accolla



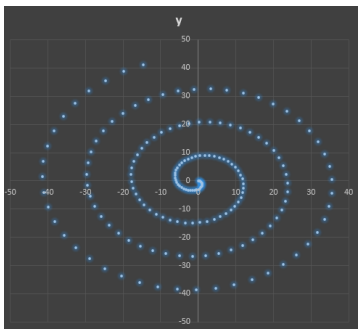
Alexandru Trifan



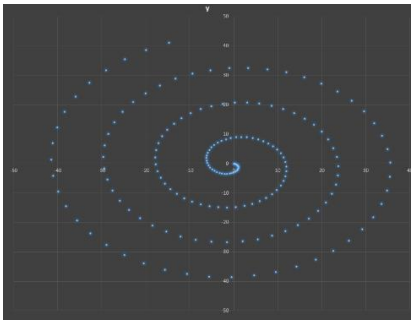
Francesco Civita



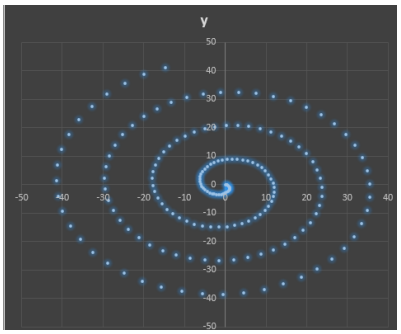
Frank Reyes



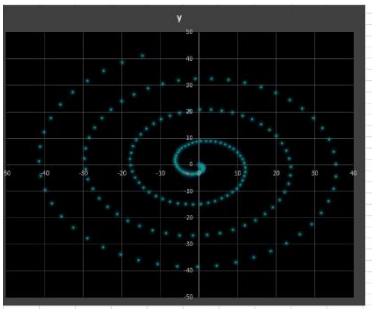
Ion Cristian Sitescu



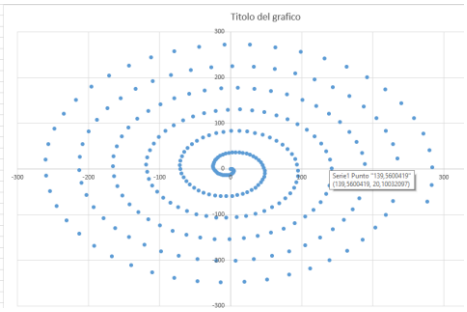
Josuè Franco



Matteo Minella

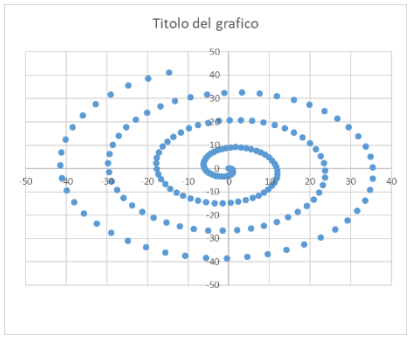


Rhenz De Los Reyes Zedirck

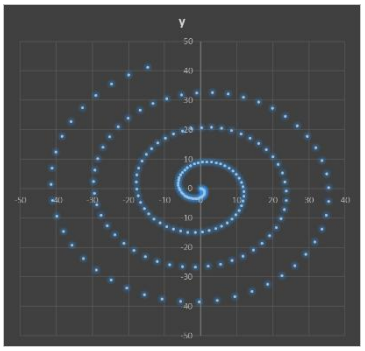


Sebastiano Coco

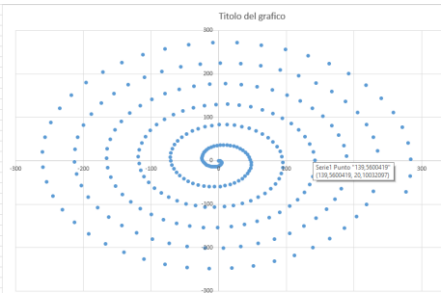
Valerian Virlan



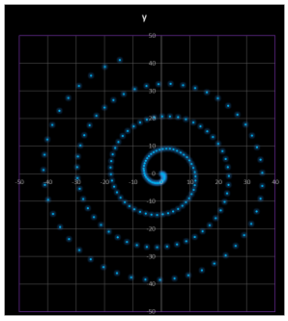
Victor Iernutian



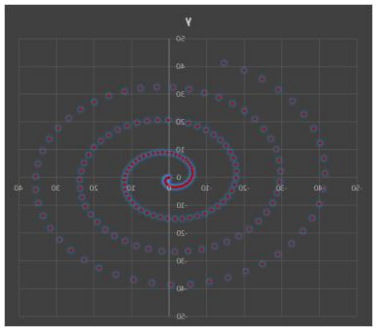
Cristian Aguila



Alessio Ferronetti

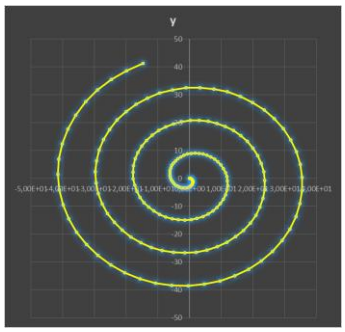


Gabriel Zapata



Tommaso Maesano

Samuele Mori



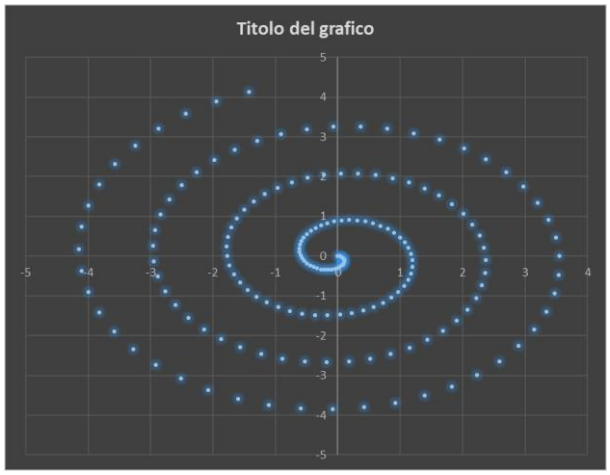
Investigating Archimedean Spirals

Video Tutorial of Jacopo Bove

First Group Jacopo Bove, Edoardo Nervi Accolla

Archimedean Spiral with Excel

Let’s represent the Archimedean Spiral through Excel. The Archimedean Spiral has $r=a+b\theta$. If a=0 then $r=b\theta$. Supposed b=0.001 and θ=0.0001 step 25 $\theta=\{0.0001,25.0001,50.0001,\dots\}$ and $x=r\cos\theta$, $y=r\sin\theta$



Second Group Sebastiano Coco, Rhenz De Los Reyes

Archimedean Spiral with Excel

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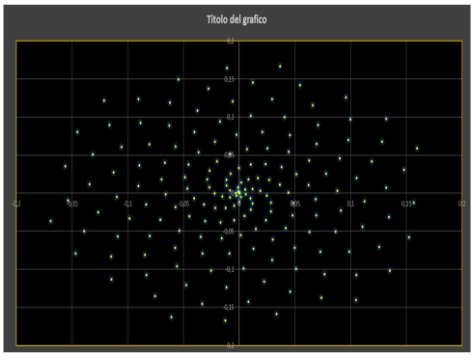
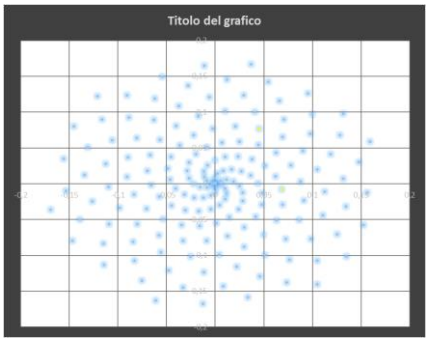
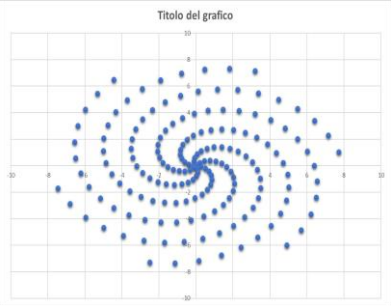


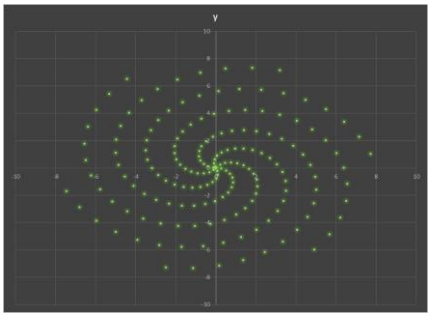


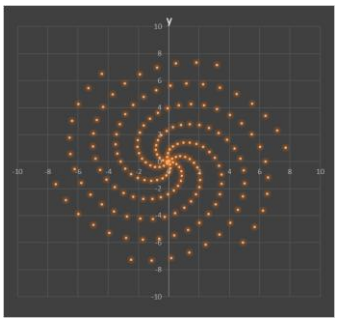
Third Group Gabriele Lazzari, Josue Franco, Victor Iernutiam, Matteo Minella

Archimedean Spiral with Excel

Let's represent the Archimedean Spiral through Excel. The Archimedean Spiral has $r=a+b\theta$. If a=0 then $r=b\theta$. Supposed b=0.001 and θ=0.0001 step 45 $\theta=\{0.0001,45.0001,90.0001,\dots\}$ and $x=r\cos\theta$, $y=r\sin\theta$







Fourth Group Valerian Virlan, Gabriel Zapata, Alexandru Trifan, Ion Sitescu

Archimedean Spiral with Excel

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