Pythagoras
2021-1-RO01-KA220-HED-000032258

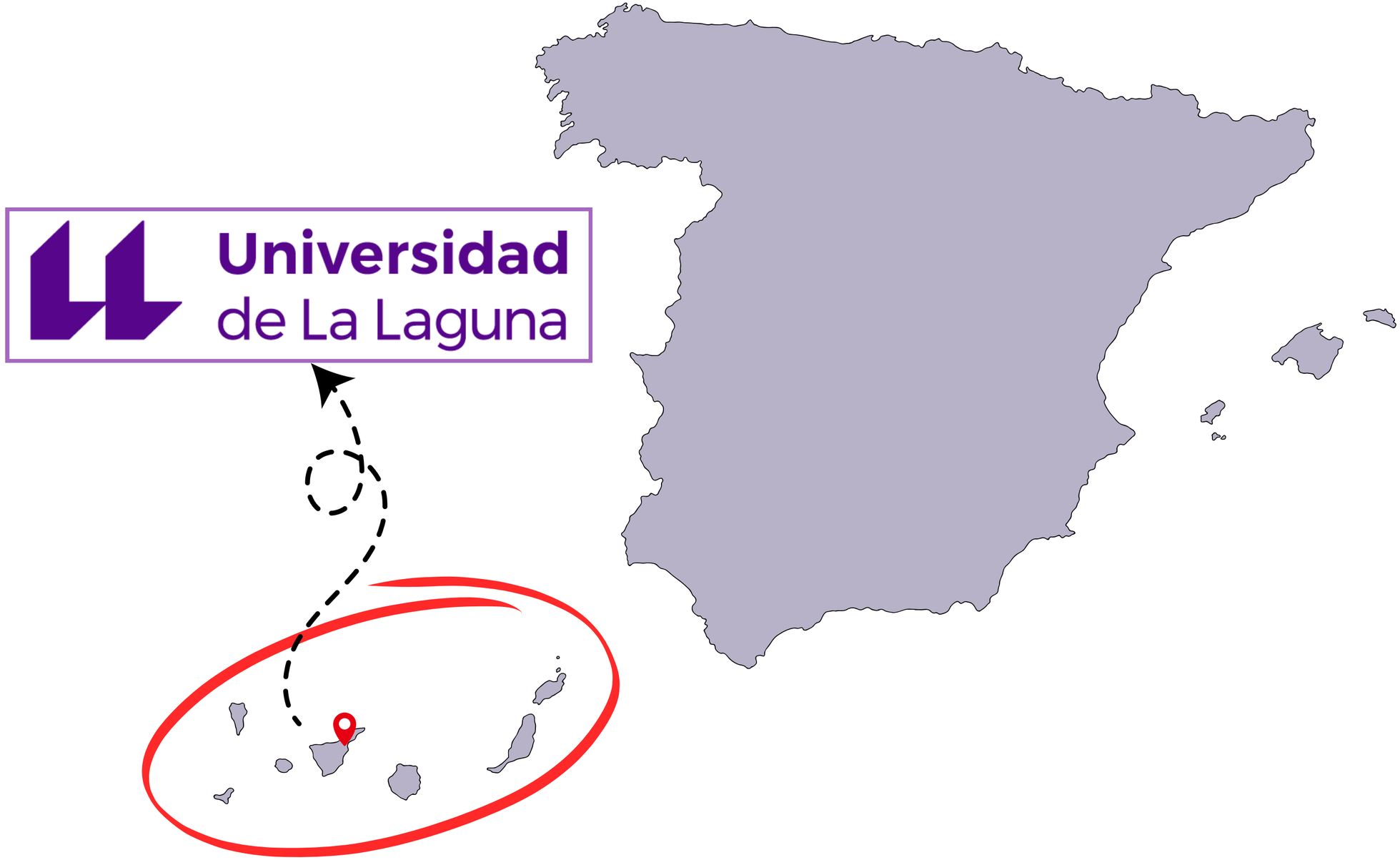
Universidad de La Laguna

Mini-PBL workshop

Israel García, Rodrigo Trujillo,

Diana Sosa, Zulema Oval y Carlos Rodríguez

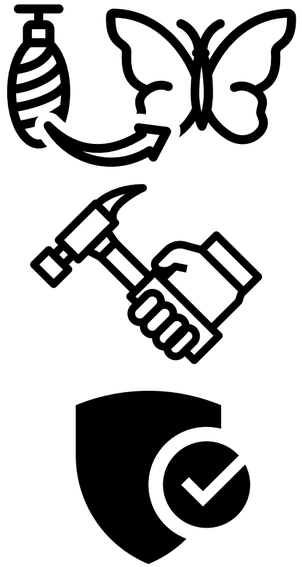
Where do we come from?



Sustainable Development Goals (SDGs)

What are the SDGs?

- *Transform*
- *Action*
- *Protect*



The Sustainable Development Goals (SDGs) aim to transform our world. They are a call to action to end poverty and inequality, protect the planet, and ensure that all people enjoy health, justice and prosperity.

A historical overview of the SDGs.

- **In 2000, the Millennium Development Goals were launched by the 192 members of the United Nations and other international organizations.**
- **The SDGs were established in 2015 by the United Nations General Assembly (UNGA) with the aim of being achieved by 2030.**

1. No poverty
2. Zero hunger
3. Good health and well-being
4. Quality education
5. Gender equality
6. Clean water and sanitation
7. Affordable and clean energy
8. Decent work and economic growth
9. Industry, innovation and infraestructure
10. Reduced inequalities
11. Sustainable cities and communities
12. Responsible consumption and production
13. Climate action
14. Life below the water
15. Life on land
16. Peace, justice and strong institutions
17. Partnerships

Education for Sustainable Development (ESD)

ESD aims to empower learners to take informed decisions and responsible actions for environmental integrity, economic viability and a just society, for present and future generations.

ESD entails four dimensions

Learning outcomes

Stimulating learning and promoting core competencies, such as critical and systemic thinking, collaborative decision-making and taking responsibility for present and future generations.

Learning content

Integrating critical issues such as climate change, biodiversity, disaster risk reduction (DRR) and sustainable consumption and production (SCP) into the curriculum.

Societal transformation

- Empowering learners of any age, in any education setting, to transform themselves and the society they live in.
- Enabling a transition to greener economies and societies.
  - Equipping learners with skills for "green jobs".
  - Motivating people to adopt sustainable lifestyles.
- Empowering people to be "global citizens" who engage and assume active roles, both locally and globally, to face and to resolve global challenges and ultimately to become proactive contributors to creating a more just, peaceful, tolerant, inclusive, secure and sustainable world.

Pedagogy and learning environments

Designing teaching and learning in an interactive and learner-centred way that enables exploratory, action-oriented and transformative learning. Rethinking learning environments – physical as well as virtual and online – to inspire learners to act for sustainability.

How is mathematics related to the SDGs?

How is mathematics related to the SDGs?

Optimization

Statistical analysis

Funcional analysis

Public policy design

Data analysis

Prediction model

Education

How is mathematics related to the SDGs?

- Statistical analysis
- Optimization
- Funcional analysis
- Public policy design
- Data analysis
- Prediction model
- Education

What is the benefit of using the SDGs in mathematics?

The integration of the SDGs into mathematics teaching offers a contextualized and meaningful framework for applying mathematical concepts to real and current problems, fostering global awareness and the development of competencies for solving complex problems.

What is next?

GDS

Sensibilization and Awareness

Toolbox

Prepare the tools for the teaching

TESTING

Training with some classes and improve all the ideas for the project

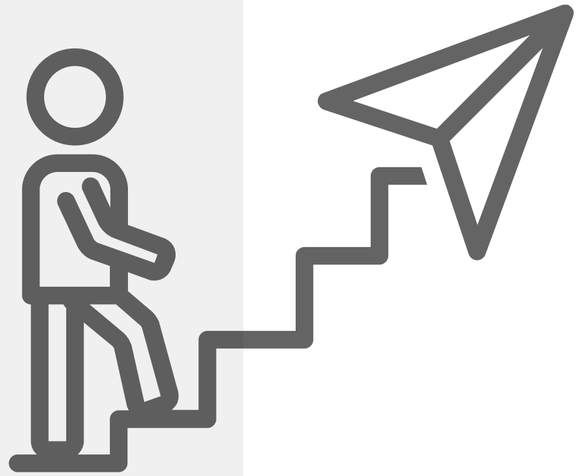
Pythagoras
WP1

ICT

Information and Communication Technology for Mathematics and GDS

Mini - PBL

Project Based Learning and characteristics for Mathematics and GDS

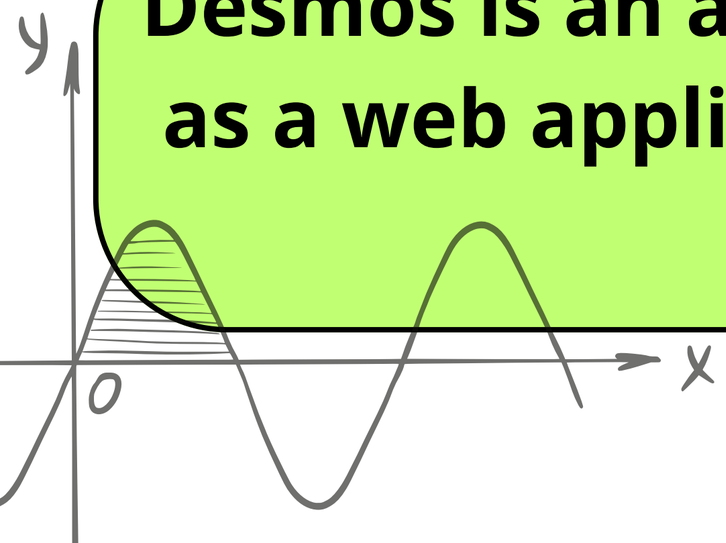


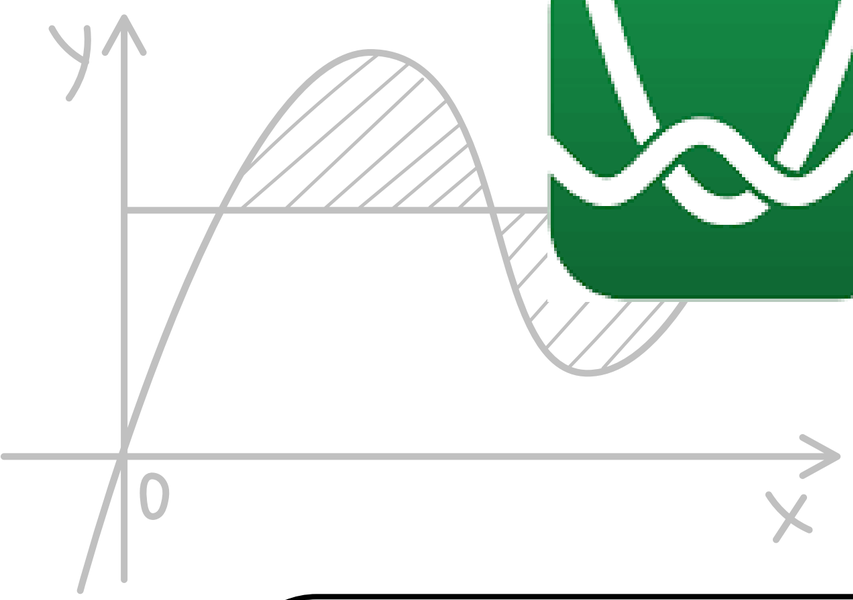
Pythagoras
2021-1-RO01-KA220-HED-000032258

Desmos: a multi-purpose application

desmos

Desmos is an advanced graphing calculator implemented as a web application and a mobile application written in TypeScript and JavaScript.





desmos

Desmos Teacher

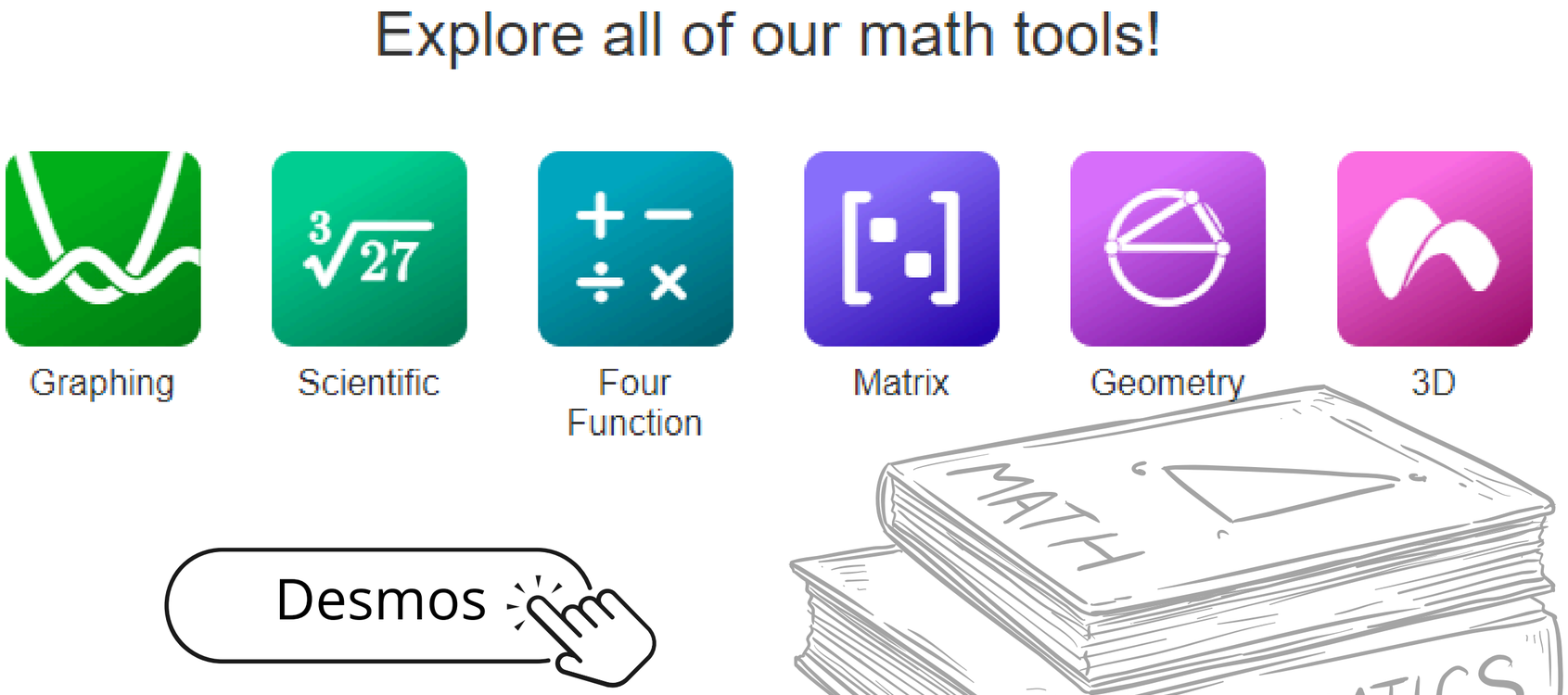
Desmos Students

Manual

Let's talk about Desmos

Desmos is a **powerful tool for visualizing mathematical concepts**, including...

- Graphing.
- Scientific.
- Four Function.
- Matrix.
- Geometry.
- 3D.

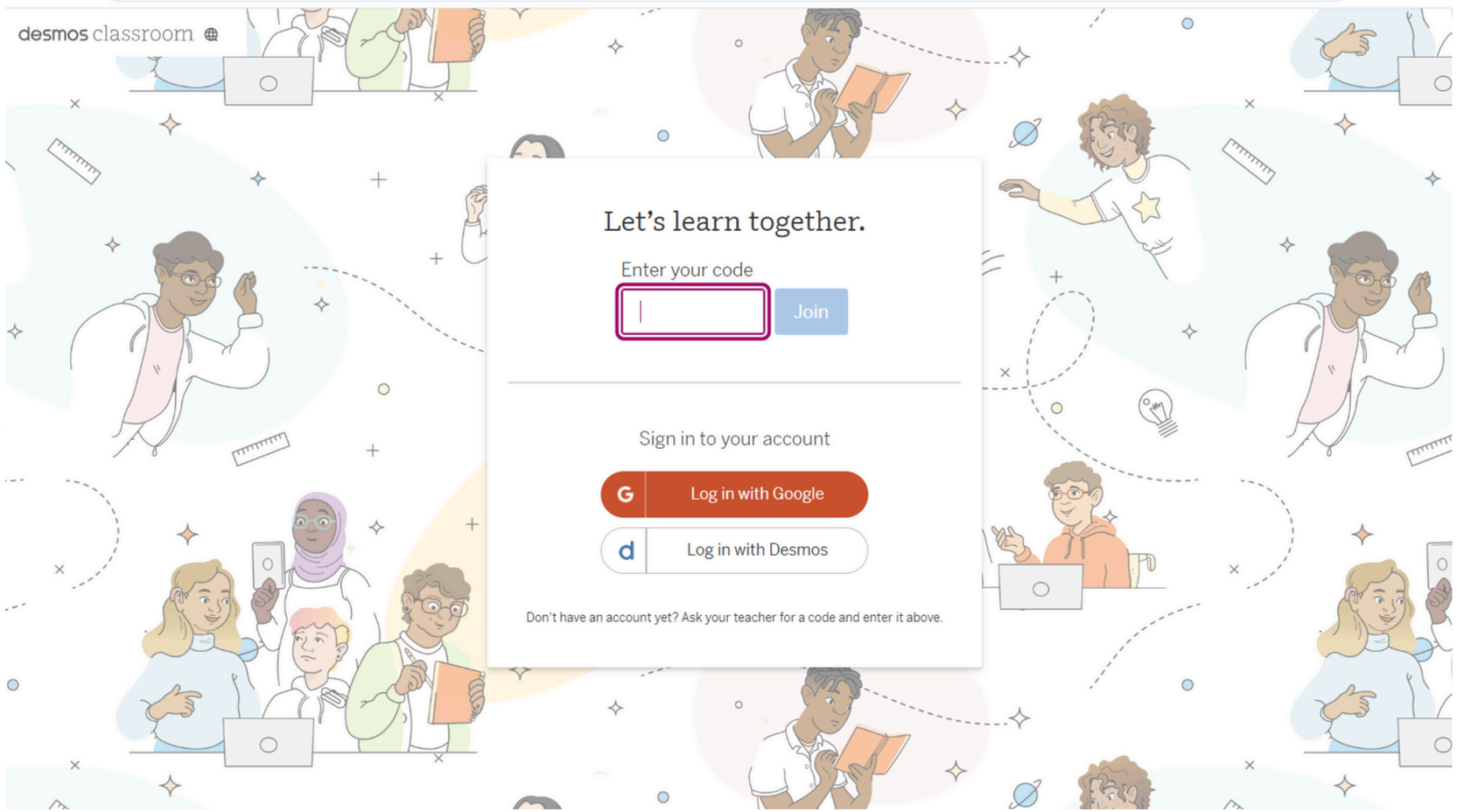


How can we fit a function using Desmos?

x_1	y_1
1970	124 973 904
1971	128 474 832
1972	127 439 600
1973	119 880 720
1974	119 205 880
1975	115 882 984
1976	114 983 880
40 more rows Show all	
2017	62 812 336
2018	61 639 532
2019	62 810 832
2020	64 162 188

It is your turn

Enter in your class using: https://student.desmos.com/?lang=es



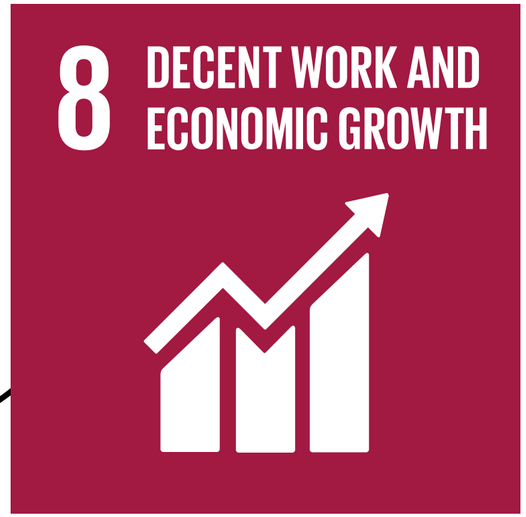
It is your turn

Enter your code:

Code:
MFQCTD

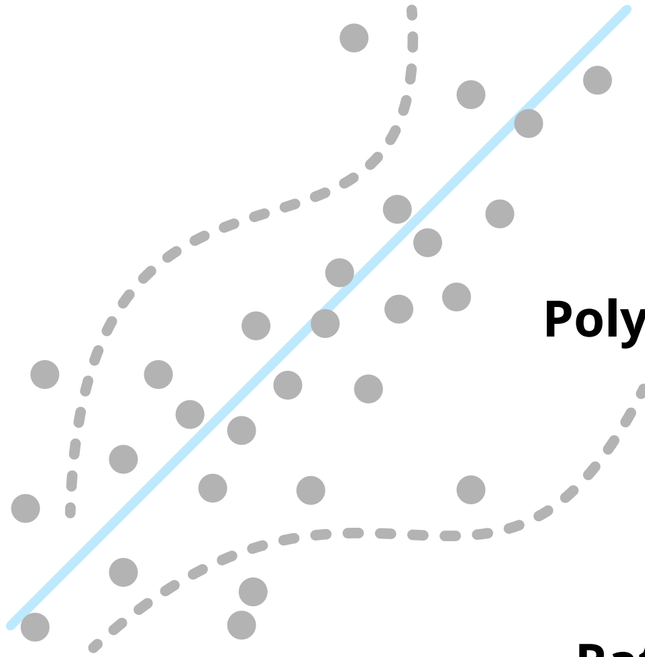
Code:
PWTK3E

Code:
FR6TF4



Code:
EZ6YGG

Some Examples



Polynomial

$$y_1 \sim Ax_1 + B$$

$$y_1 \sim Ax_1^2 + Bx_1 + C$$

$$y_1 \sim Ax_1^3 + Bx_1^2 + Cx_1 + D$$

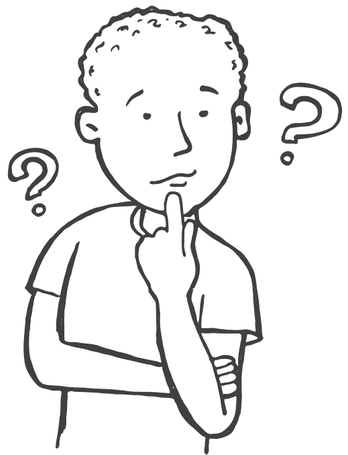
Rational

$$y_1 \sim \frac{Ax_1 + B}{ax_1^2 + bx_1 + c}$$

Trigonometric

$$y_1 \sim A \sin\left(ax_1^2 + bx + c\right)$$

$$y_1 \sim A \cos\left(ax_1^2 + bx + c\right)$$



Polynomial + Trigonometric

$$y_1 \sim Ax_1^2 + Bx_1 + C + D \sin\left(ax_1^2 + bx + c\right)$$