Assignment 3

063-0610-00L The Digital in Architecture I

Spring Semester 2020

Gramazio Kohler Research, ETH Zürich

Due: Mo, 09.03.2020 23:59

Task 1

Generate **4** different **2D mathematical equations** using Grasshopper.

Task 2

Using the same equations from Task 1, turn them into **3D mathematical equations** using Grasshopper.

Task 3 (bonus)

By combining **at least 3** different equations from Task 1 and 2, join them at the starting and end point to create a continuous interpolated curve.

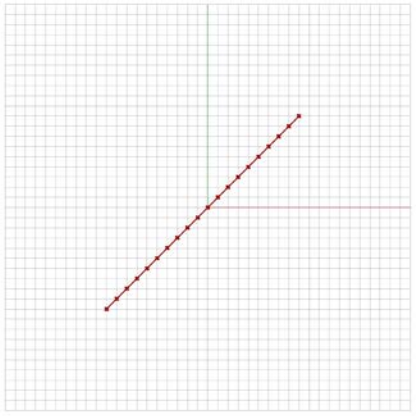
To submit:

- A **.pdf** file containing 3 pages. Each of the pages will contain a different Task. Have a look into the submission examples below in order to format it. Rename your pdf file to include your surname and name (`Assignment3_Mustermann_Chris.pdf`)

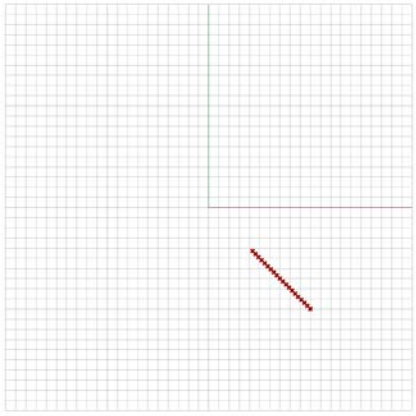
  To create the screenshots of your design, follow this settings:
  - In Grasshopper, preview only the output **points** and the interpolated **curve**.
  - In Rhino: change **background to white** and keep the default grid.
  - Use `ViewCaptureToFile` command to make the screenshot, set width=3000 and height=1500, with WorldAxes, CPlaneAxes, and Grid adjusted to the scale of your design. Use white Background and Save as `*.png`, filename same as your Grasshopper file.

- A **Grasshopper file** (*.gh) with your algorithms. Diferentiate the different tasks by grouping them in 3 different blocks inside Grasshopper.

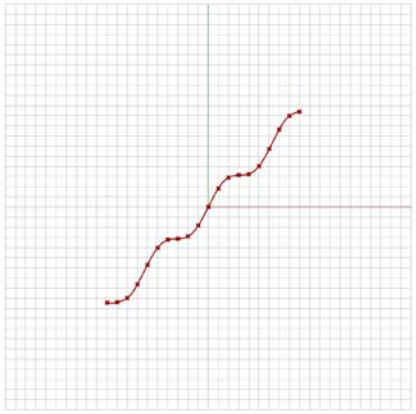
Submission Examples 2D



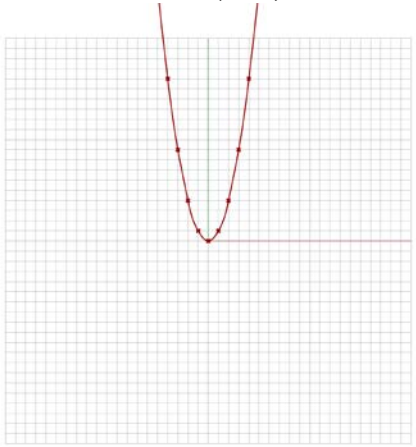
Straight Line with positive slope with
X domain (-10,10)
Y domain (-10,10)



Straight Line with negative slope with
X domain (4,10)
Y domain (-4,-10)

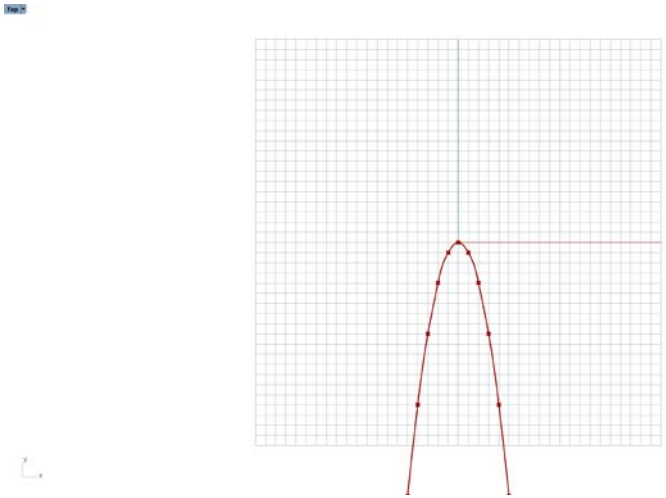


Combination of straight line with sine equation

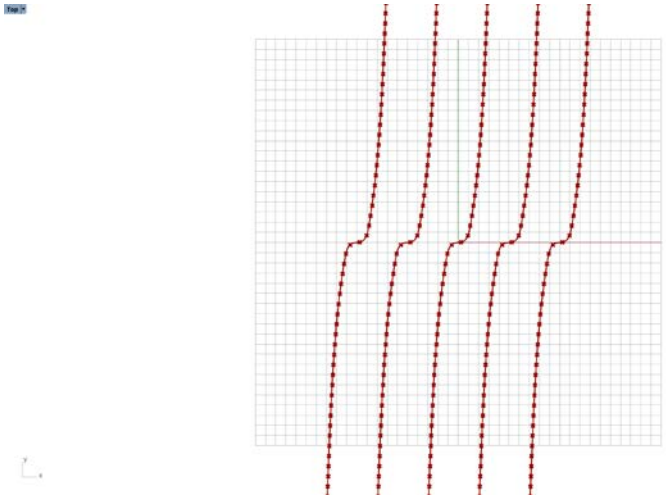


Parabolic equation

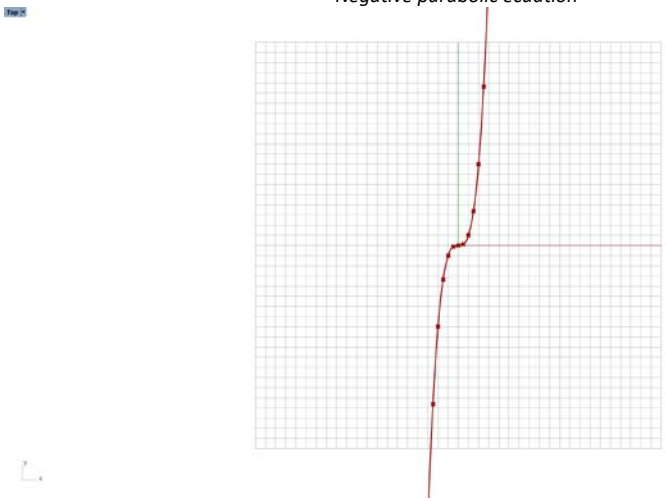
Submission Examples 2D



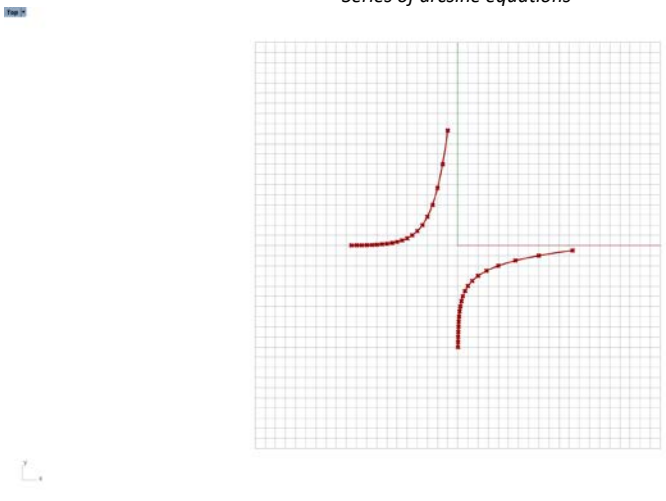
Negative parabolic ecuation



Series of arcsine equations

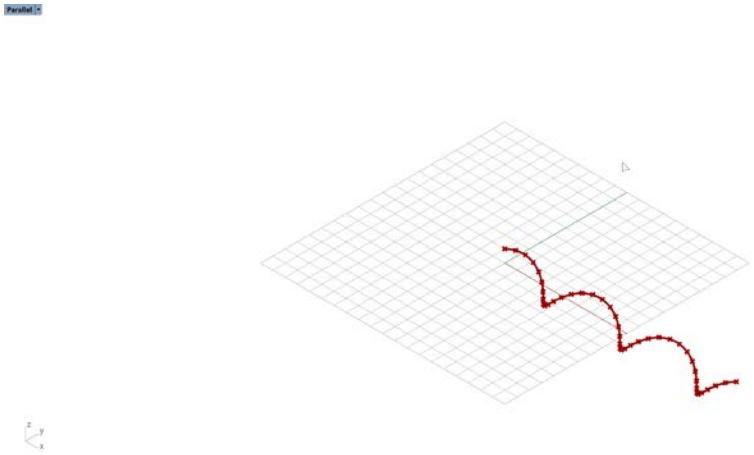


Arcsine equation

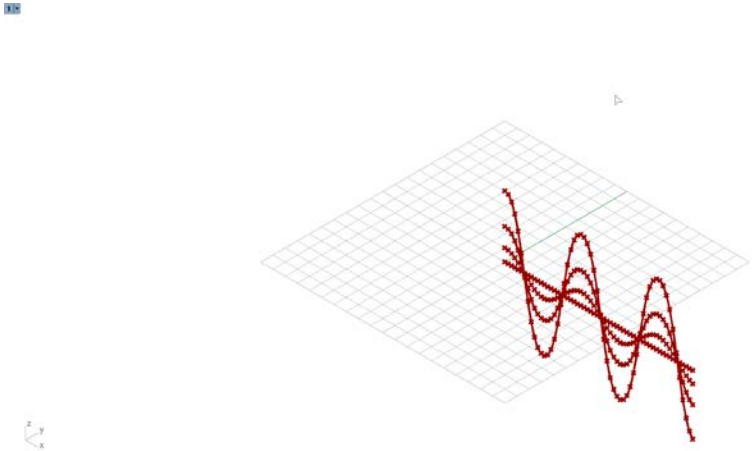


Arcsecant equation

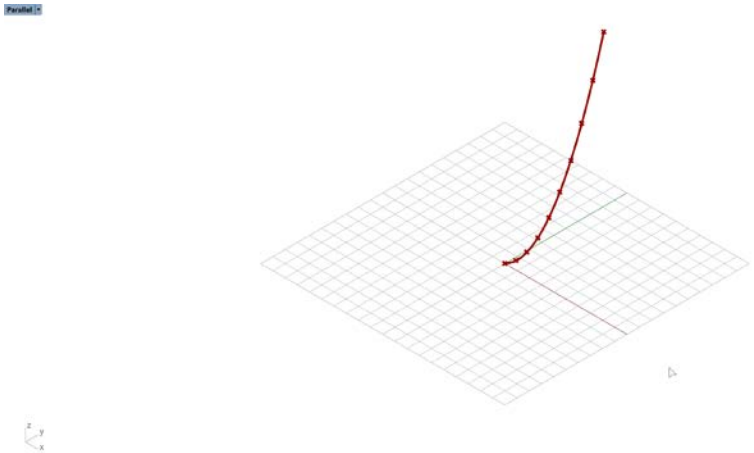
Submission Examples 3D



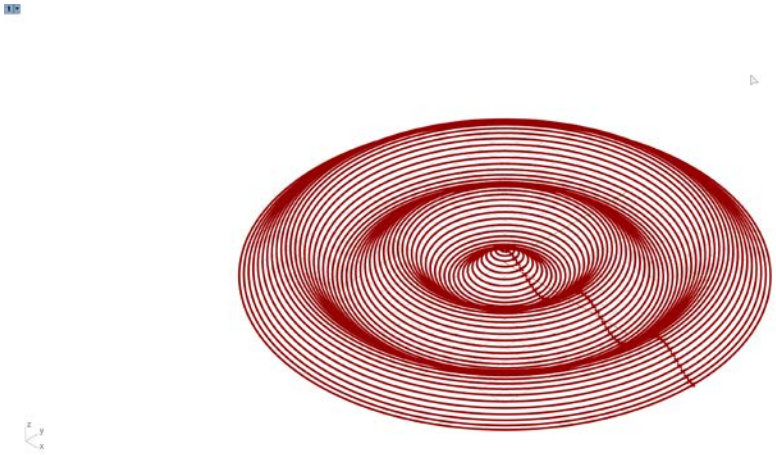
Spiral



Series of sine waves

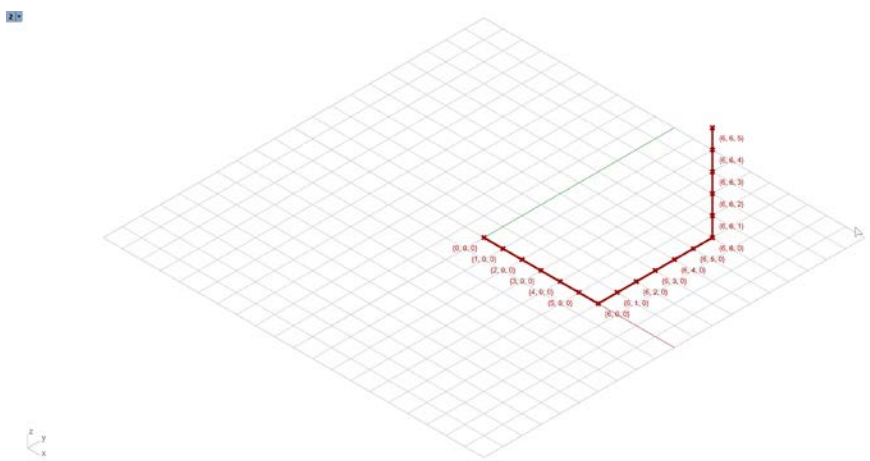


Parabolic with Z (height)

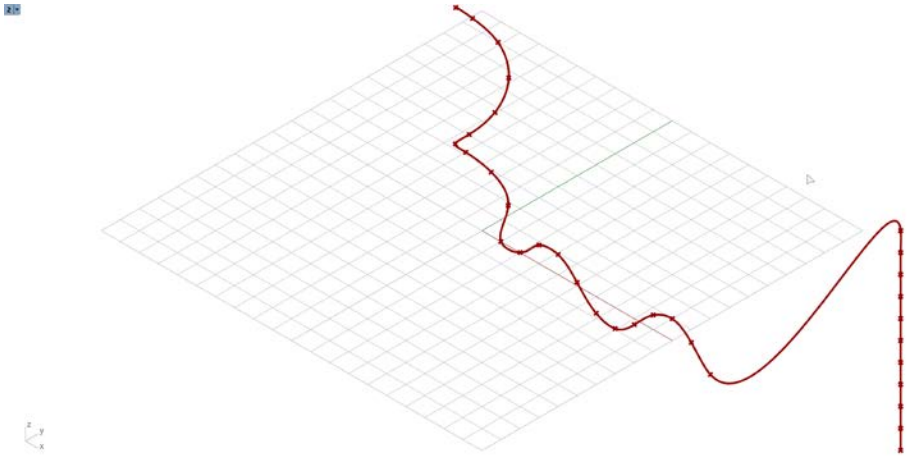


Sine wave (Array polar)

Submission Examples 3D composed



Composition of 3 straight lines



Composition of 3 different equations
with different starting point