Basin

GOALS :

Learn to use advanced 3D functions to generate parts with more complex shapes:

- ribs (scanning of a profile along a line),
- hulls (digging of a piece in order to have a canvas of constant thickness),
- smoothings (connection of sections with or without side guides).

I - RIB FUNCTION

We are going to create a convoluted shaped (plastic) bowl to demonstrate the possibilities of the rib feature. We'll do a scan of the rim section of the bowl; we will make an extrusion to make the bottom of the bowl; then we will finish by placing some fillets. Here is the final result (fig.01):

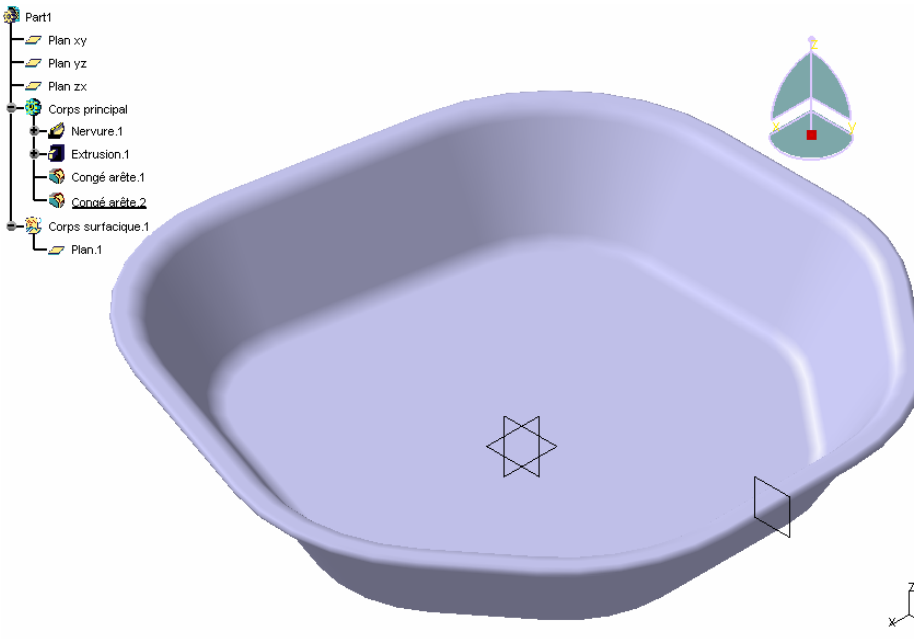


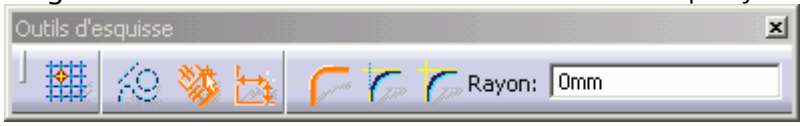
Fig. 1

1° Creation of the scanning line:

In the horizontal plane, create the following profile (Sketch.1) with all the dimensions and all the constraints (fig.02):

Tips :use the Outline icon and draw only straight lines with the only constraints being the horizontality of the top line and the verticality of the left line.

Select the 6 points of the angles then click on the Rounded icon  and specify the radius 20mm in the box**Sketch tools**



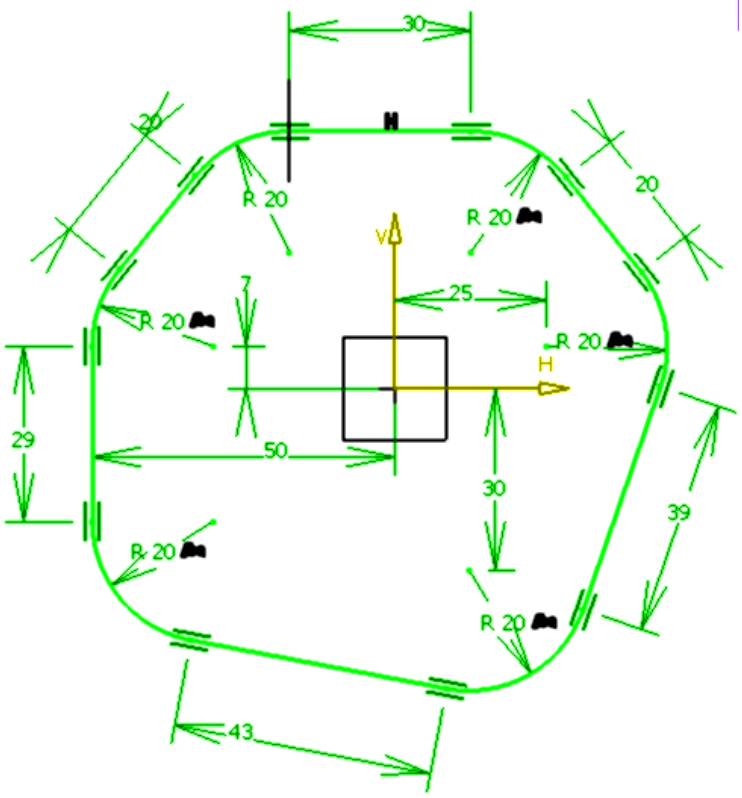
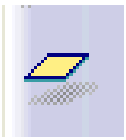


Fig. 2

2° Creation of a plan:

Create a new plan with the “Plan” tool (“Reference elements” icon bar) (fig.03):



Choose the “normal to a curve” type and select the scan profile that has just been created, then select a point on this profile (fig.04):

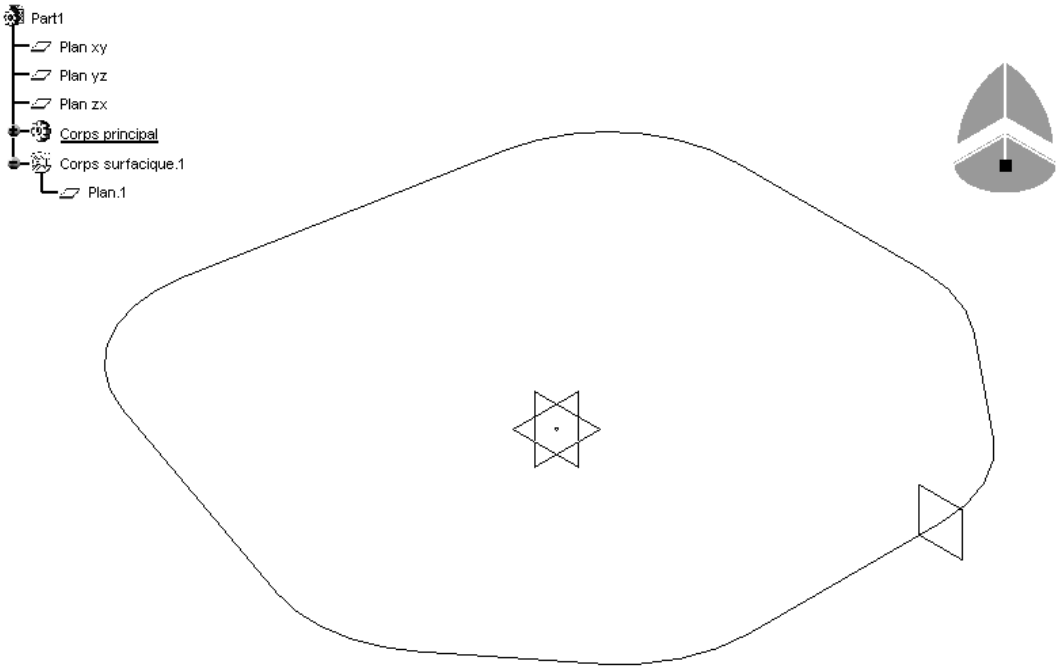


Fig. 3

3° Creation of the section:

In the plane that has just been created, draw the following profile (2mm offset) with its constraints (fig.05):

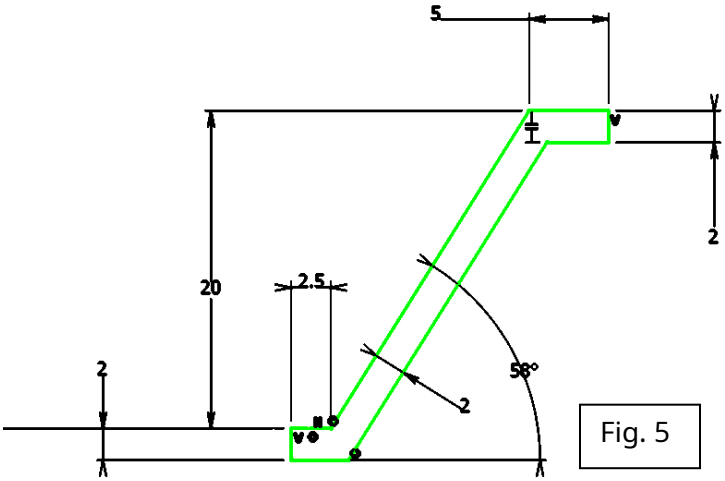
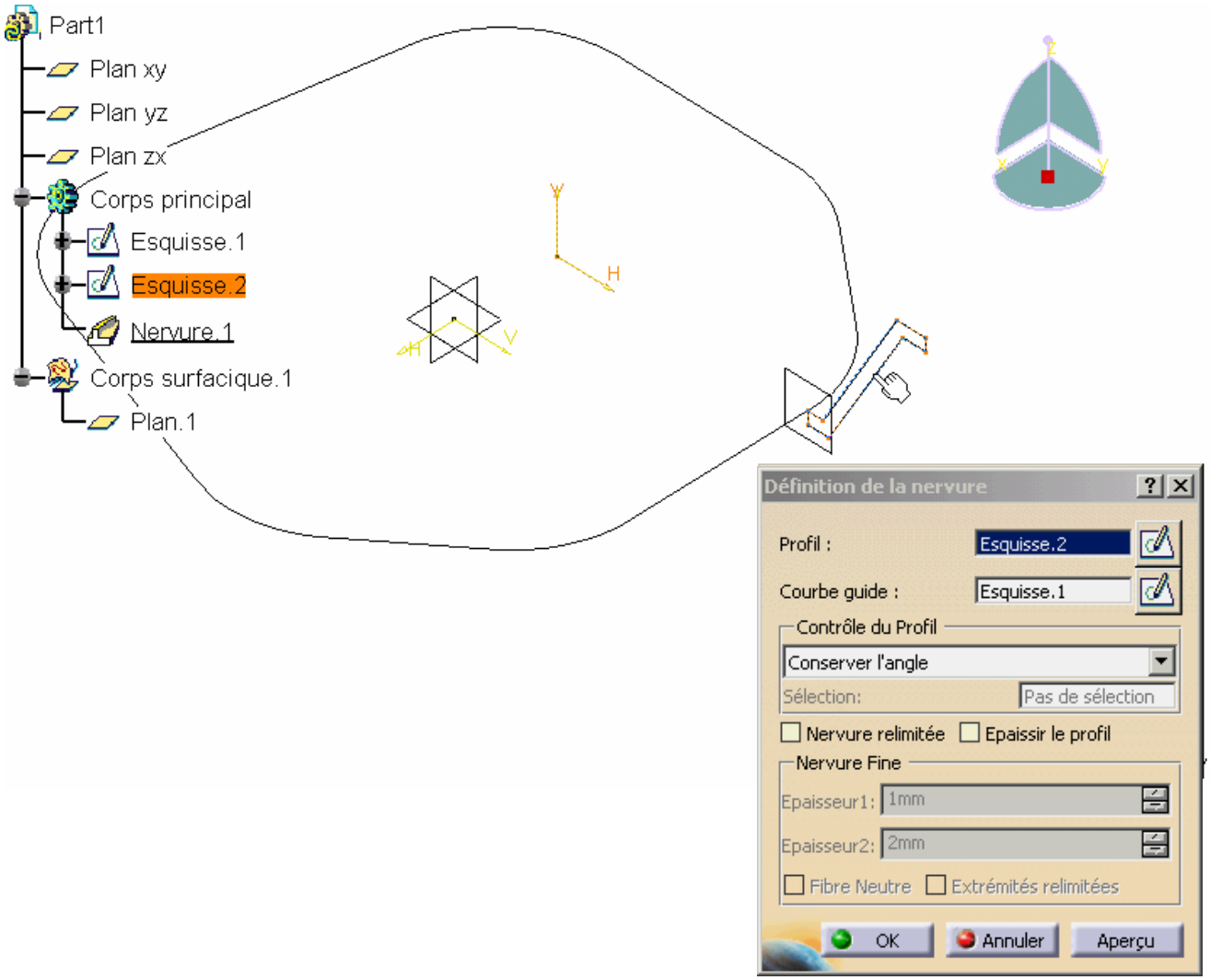


Fig. 5

4° Use of the “rib” function:

Click on the tool**Rib**  (fig.06): A dialog box opens (fig.07):



Select the last profile you created as the outline. Select as guide contour, the first (sweep) profile. Profile control will remain on**Maintain Angle** which will allow the section to remain perpendicular to the scan line. Click on**okay**to see the result (fig.08):

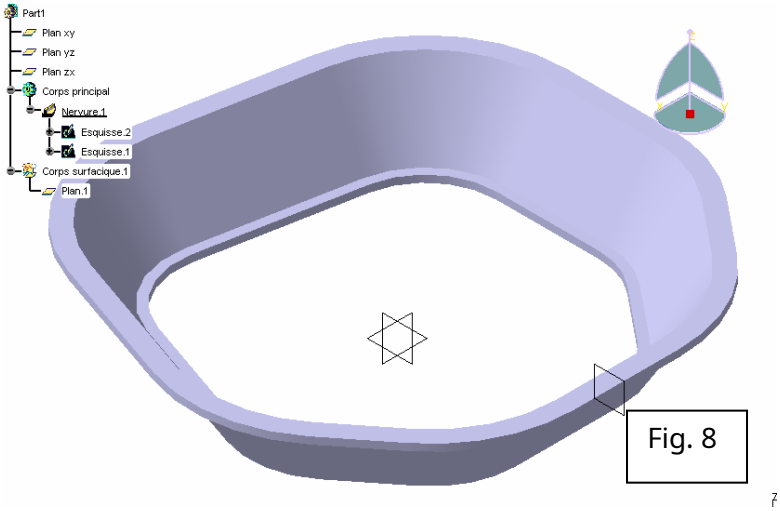


Fig. 8

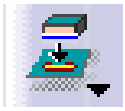
5° Creation of the background by "extrusion":

The profile that will be useful for the background already exists:

- Either we recover the first profile (Sketch.1) by "copying/pasting with constraints" from it, if we subsequently modify a dimension of the first profile, the profile that has been copied will be modified

- Either we create a new profile by capturing the inner edges of the bowl. If a dimension of the first profile (Sketch.1) is modified, the profile of the bottom of the pit will be automatically updated.

This is the method we are going to apply: Select the horizontal plane and create a new profile. Now use the tool**Projection of 3D elements**(fig.09):



Click the inner edges of the bowl. It is useless to place dimensions because this profile is linked to the edges, in the event of a change in their dimensions (unless their number is modified) (fig.10):

Make sure you have a complete outline, close the sketch workbench and extrude this profile 1.5mm towards the bottom (fig.11):

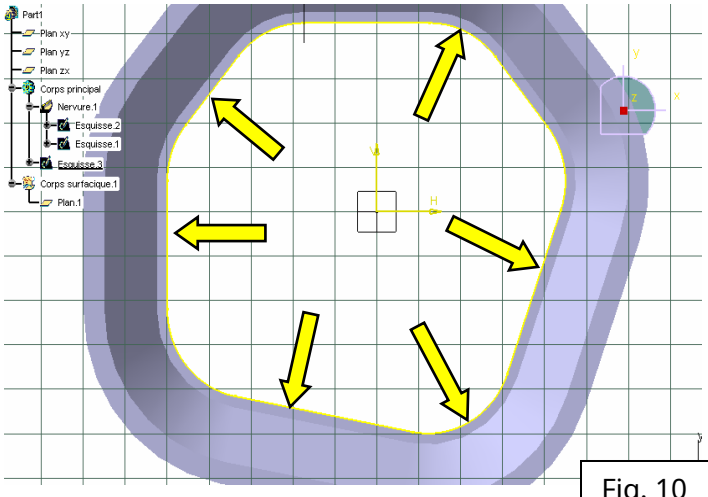


Fig. 10

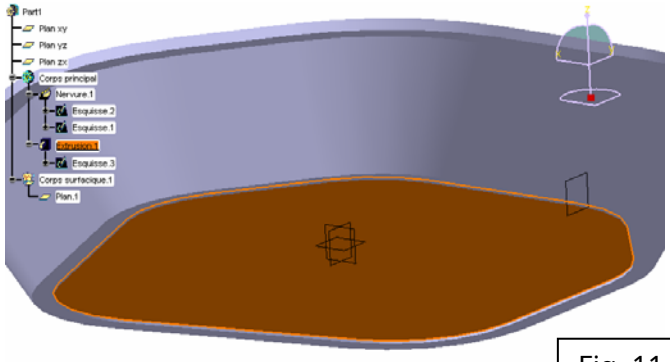
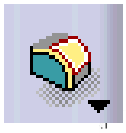


Fig. 11

6° Finishing:

Create a 4mm fillet (fig.12):



Select an edge from the bottom and one from the upper inside edge of the bowl, the propagation by tangency being checked (fig.13):

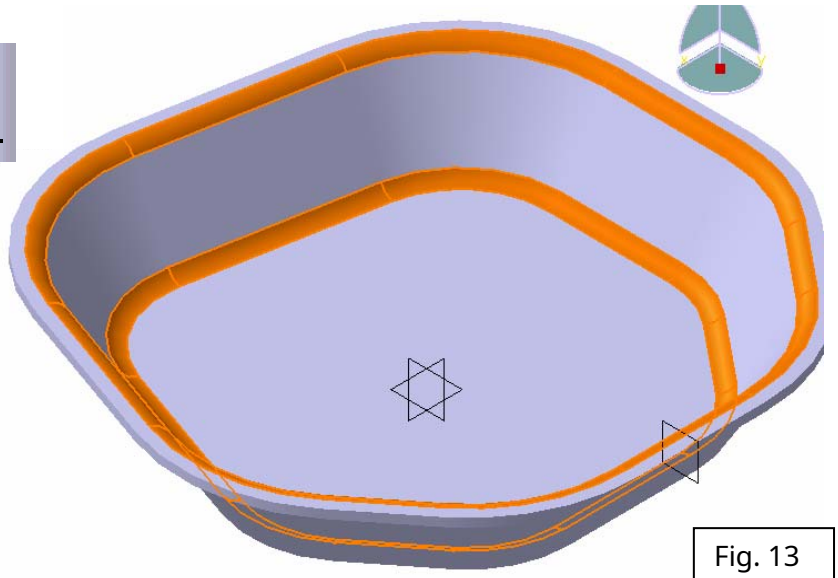


Fig. 13

Create a 1mm fillet by selecting the 2 edges of the outer top edge of the bowl,the bottom edge of the rim andbottom outer edge (fig.14):

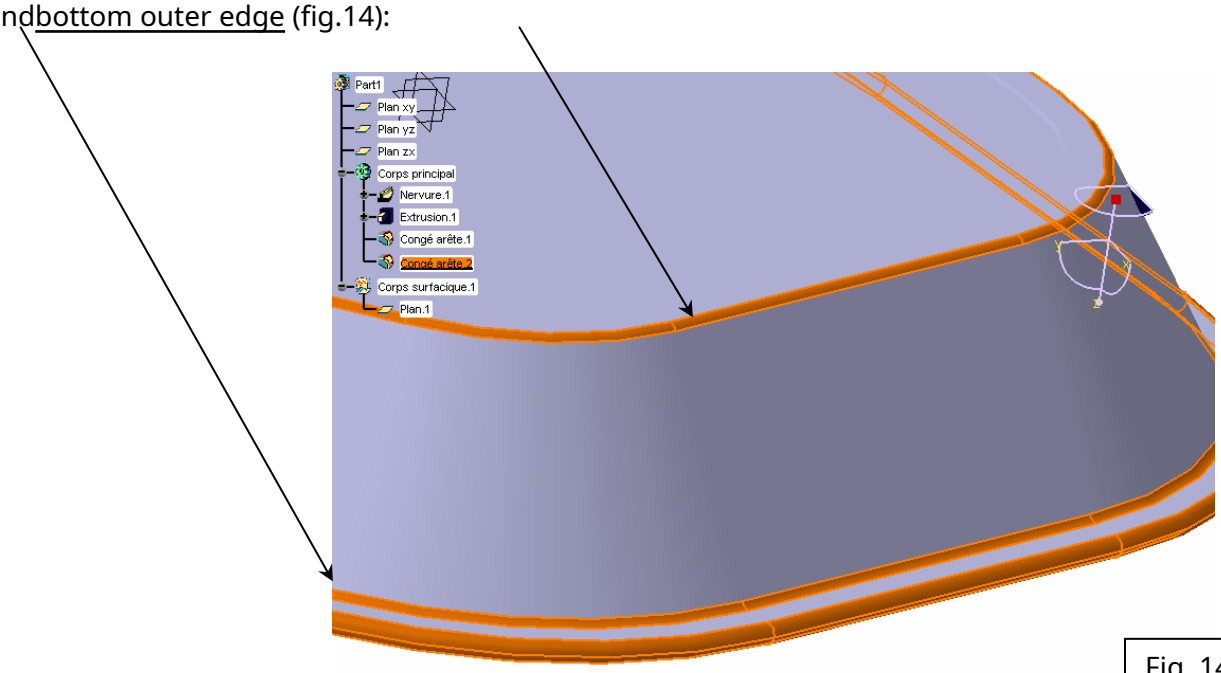


Fig. 14

The bowl is finished, you can save it.