

## Userdefined Implicit Space Curves\*

The exhibit shows the intersection curve of two surfaces, given by equations  $F1(x, y, z) = ff$ ,  $F2(x, y, z) = gg$ .

To see also the surfaces (as dotted point clouds) choose the corresponding entry in the Action Menu.

The initial dialogue offers three different defaults for the surfaces given by  $F1$ ,  $F2$ :

- 1.) A conic and a plane with the default morph tilting the plane.
- 2.) The graph of a function  $\mathbb{R}^3 \mapsto \mathbb{R}$  and a cylinder. This exhibit can be used to explain extrema under side conditions.
- 3.) A torus and a tangent plane. This is an example where the intersection has double point singularities at those points where the intersection of the surfaces is not transversal.

By varying these defaults one can create a rich collection of space curves. (The number of points in the point clouds cannot be changed in this exhibit.)

Note that the surfaces are only computed inside a sphere of radius ORB around the origin. This parameter can be set in the first entry of the Settings Menu.

H.K.

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\* This file is from the 3D-XplorMath project. Please see:

<http://3D-XplorMath.org/>