



***7. Cutting the cone with 4 planes***

*Warsaw University of Technology*

*Civil Engineering Faculty*

***Intellectual Output:*** O1: Cutting Geometrical Solids with Planes.

***Exercise number:*** 7

***Title*:** Cutting the cone with 4 planes

***Description****:*

The cone presented below has been cut with 4 planes – α, β, γ, δ. Construct horizontal and profile projections (A3 size, scale 1:1), locate the position of planes yourself, give specific angles designed, use paper and pencil or /and computer software.

After drawings answer the questions below:

1. Are the planes α and β mutually perpendicular?

If not, is the angle between them acute or obtuse?

1. Are the planes γ and δ mutually perpendicular?

If not, is the angle between them acute or obtuse?

1. What types of sections correspond to each plane: circle, ellipse, hyperbola, parabola?
2. What type of section would appear, if a vertical plane cuts through the apex of the cone?

***Given digital files:***

IO1-7-a.pdf: frontal projection of the cone and cutting planes

IO1-7-b.obj: 3D model of the given problem solved.

***Result:***

Frontal, horizontal and profile projections of the cone cut with 4 planes (A3 size, scale 1:1)

Answer to questions 1-4.

***Prior knowledge:***

Basic knowledge related to descriptive geometry, knowledge of geometrical surfaces.

***Augmented reality content:***

3D model of geometric solid cut with relevant cutting planes.

