



***10. Cutting the cone with 5 planes***

*Warsaw University of Technology*

*Civil Engineering Faculty*

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

***Exercise number:*** 10

***Title*:** Cutting the cone with 5 planes

***Description****:*

The cone presented below has been cut with 5 planes – α, β, γ, δ, ε. 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 γ and δ mutually perpendicular? Where do they intersect – within the cone, on its surface or outside of the solid?
2. If the planes α and γ mutually intersect, would it break the cone’s outline?
3. What would happen if the planes α and ε mutually intersect?
4. What types of sections correspond to each plane: circle, ellipse, hyperbola, parabola?

***Given digital files:***

IO1-10-a.pdf: frontal projection of the cone and cutting planes

IO1-10-b.obj: 3D model of the given problem solved.

***Result:***

Frontal, horizontal and profile projections of the cone cut with 5 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.

