



***18. Cutting the sphere with 5 planes***

*Warsaw University of Technology*

*Civil Engineering Faculty*

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

***Exercise number:*** 18

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

***Description****:*

The sphere 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 α and δ mutually parallel?

If not, do they intersect below or above the sphere?

1. If the planes β and ε mutually intersect, would it break the sphere's outline?
2. Would it be the same for the intersection between planes γ and ε?
3. If yes, in which case the break in the outline will be wider?

***Given digital files:***

IO1-18-a.pdf: frontal projection of the sphere and cutting planes

IO1-18-b.obj: 3D model of the given problem solved.

***Result:***

Frontal, horizontal and profile projections of the sphere 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.

