



***11. Cutting the sphere with 3 planes***

*Warsaw University of Technology*

*Civil Engineering Faculty*

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

***Exercise number:*** 11

***Title*:** Cutting the sphere with 3 planes

***Description****:*

The sphere presented below has been cut with 3 planes – α, β, γ. 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. What type of section do the planes form?
2. Sort the planes according to the radius of the section they form (from smallest to largest radius).
3. If the planes α and γ mutually intersect, would it break the sphere's outline? Why?
4. Is it possible that the radius of the sphere’s section would be greater than the radius of the sphere?

***Given digital files:***

IO1-11-a.pdf: frontal projection of the sphere and cutting planes

IO1-11-b.obj: 3D model of the given problem solved.

***Result:***

Frontal, horizontal and profile projections of the sphere cut with 3 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.

