



***41. Cutting the cylinder with 4 planes***

*Warsaw University of Technology*

*Civil Engineering Faculty*

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

***Exercise number:*** 41

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

***Description****:*

The cylinder 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 β and γ mutually parallel? If not, where do they intersect?
2. Are the planes γ and δ mutually symmetrical about the cross-section of the cylinder?

Is the surface area of these sections the same?

1. What types of sections correspond to each plane: circle, ellipse, rectangle?
2. Sort non-rectangular sections basing on increasing ratio between its axes (from smallest to largest ratio).

***Given digital files:***

IO1-41-a.pdf: frontal projection of the cylinder and cutting planes

IO1-41-b.obj: 3D model of the given problem solved.

***Result:***

Frontal, horizontal and profile projections of the cylinder 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.

