



„CONTEMPORARY APPROACH TO THE DEVELOPMENT OF SPATIAL COMPREHENSION THROUGH AUGMENTED REALITY CONTENT“

**Warsaw University
of Technology**

41. Cutting the cylinder with 4 planes

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<https://liggd.it/spacar/en/graphic-materials>

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SPACAR

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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?
3. What types of sections correspond to each plane: circle, ellipse, rectangle?
4. 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.



Erasmus+

PROJECT CONSORTIUM PARTNERS:



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P2. Riga Technical University [RTU]

Warsaw University
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P3. Warsaw university of technology [WUT]



P4. Polytechnic university of Valencia [UPV]



P5. Siauliai vocational education and training centre [Siauliai PRC]

SNEAKYBOX

P6. SneakyBox [SBox]



P7. Jugendförderverein Parchim/Lübz e.V. [JFV PCH/LBZ e.V.]



P8. DECROLY, SL [DECROLY]