

# Digital Representation

2023 - 2024

Faculdade de arquitetura da Universidade de Lisboa

Masterado Integrado em Arquitectura

Professor : Nuno Alão

Turma : H

Nome : Krzysztof Braszczok 20238009

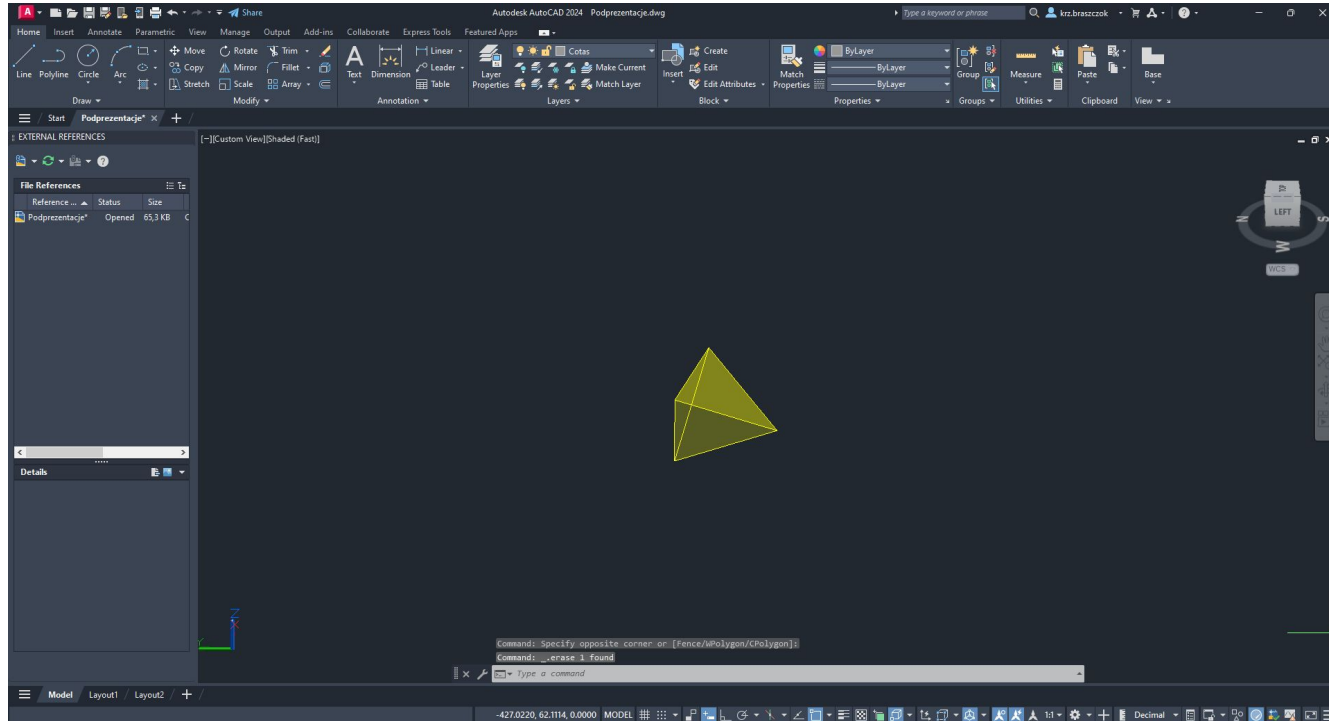
# Layer creation

I first create the necessary layers to work with, which helps me navigate through models more efficiently.

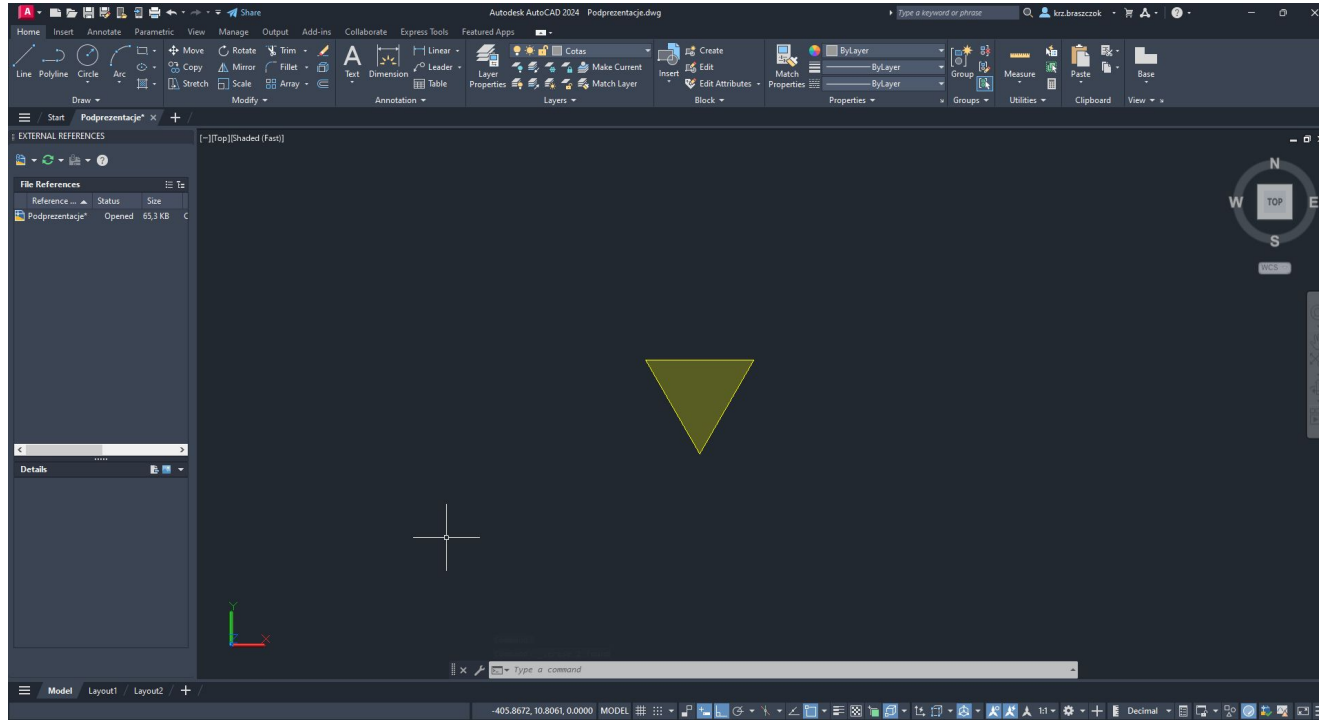


# Tetraedro

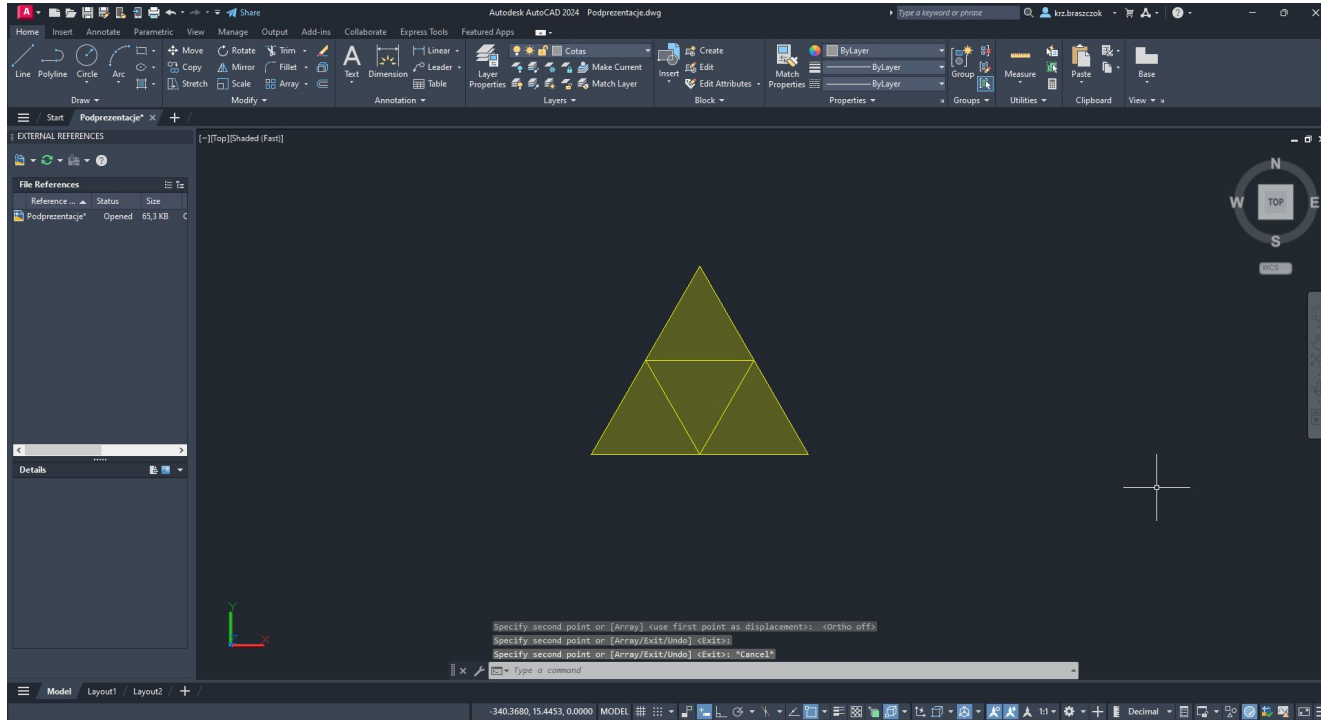
Four triangular faces, four vertices, and six edges



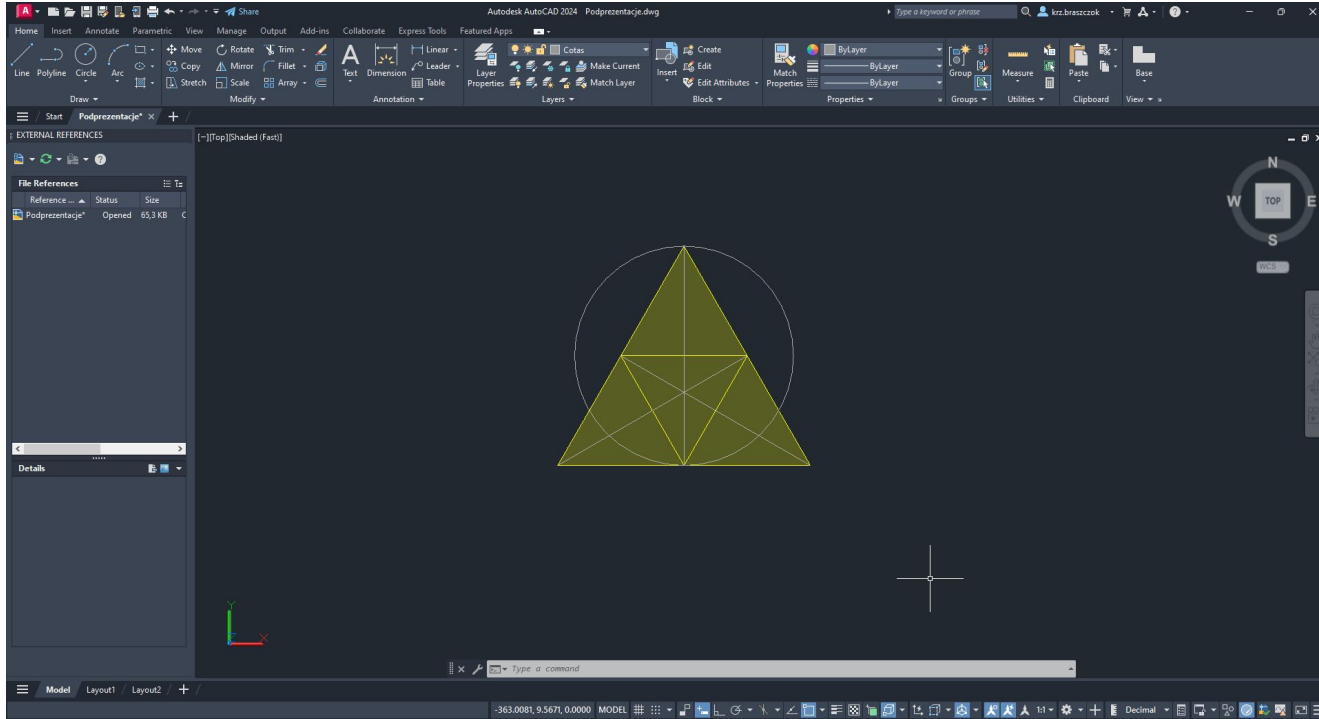
Create an equilateral triangle with a side length of 10.



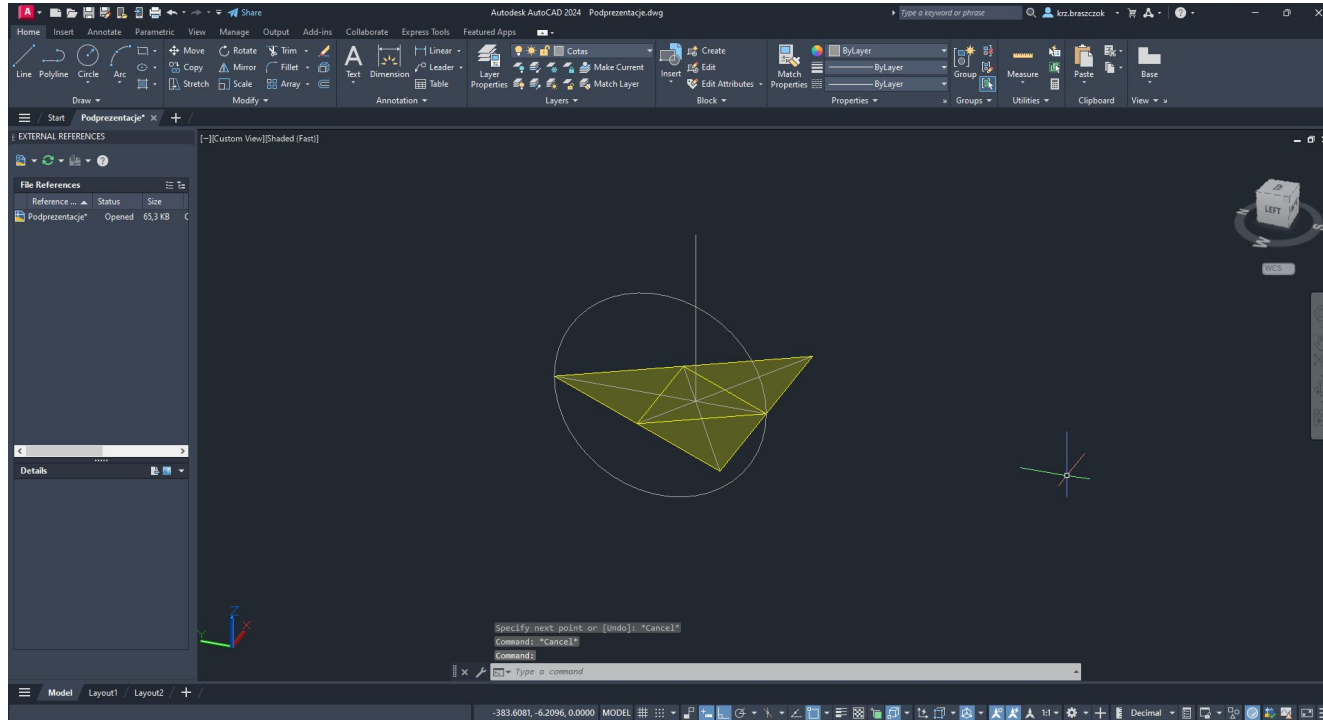
Using the Mirror, Copy, and Rotate tools, recreate the situation shown in the picture.



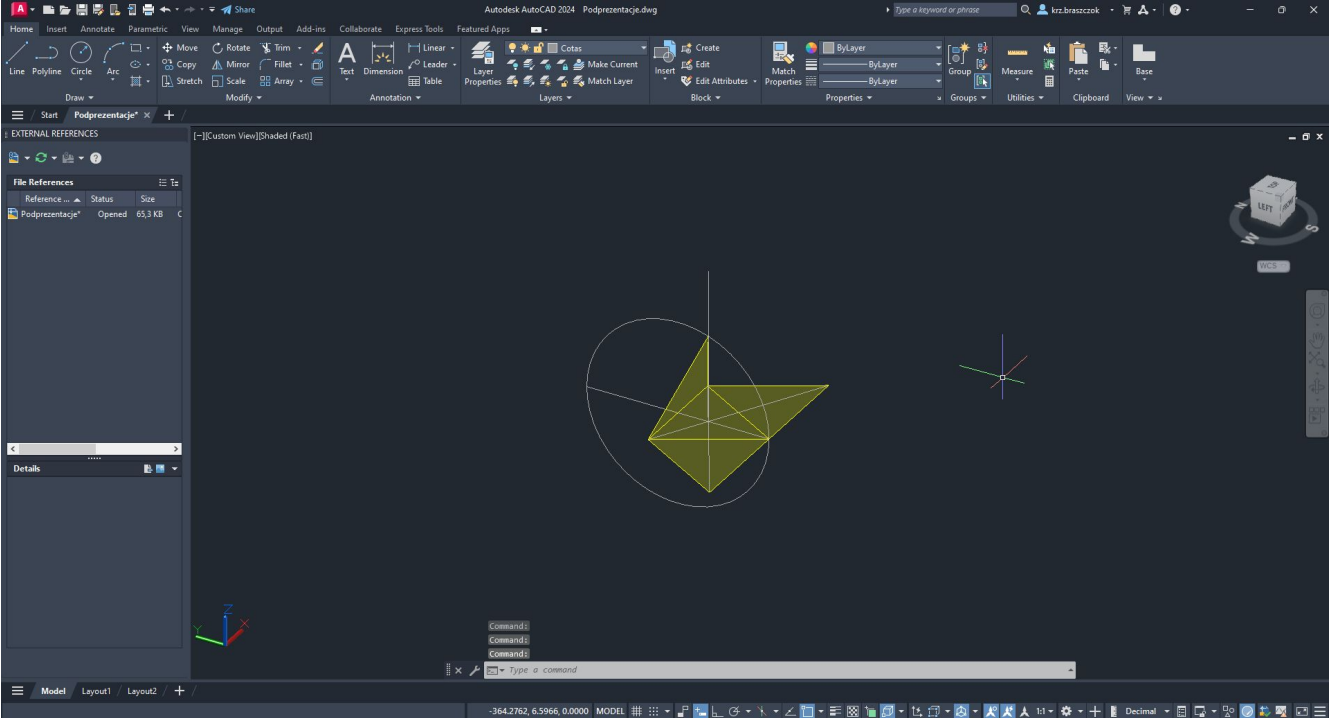
Determine the center of the resulting triangle and the circumscribed circle on it



Rotate the circle by 90 degrees using the 3D Rotate tool.

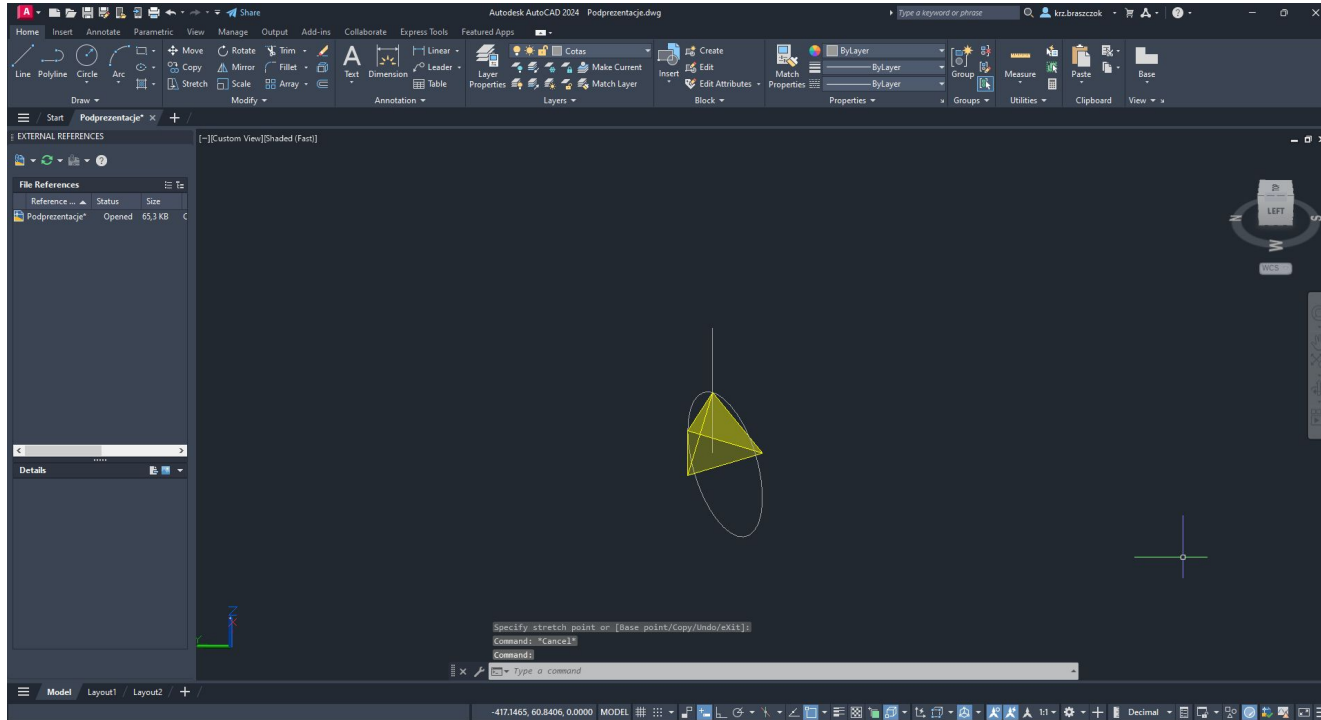


Using the 3D Rotate tool, align the hatch of the triangle to the point of intersection between the circle and the vertical line extending from the center of the triangle



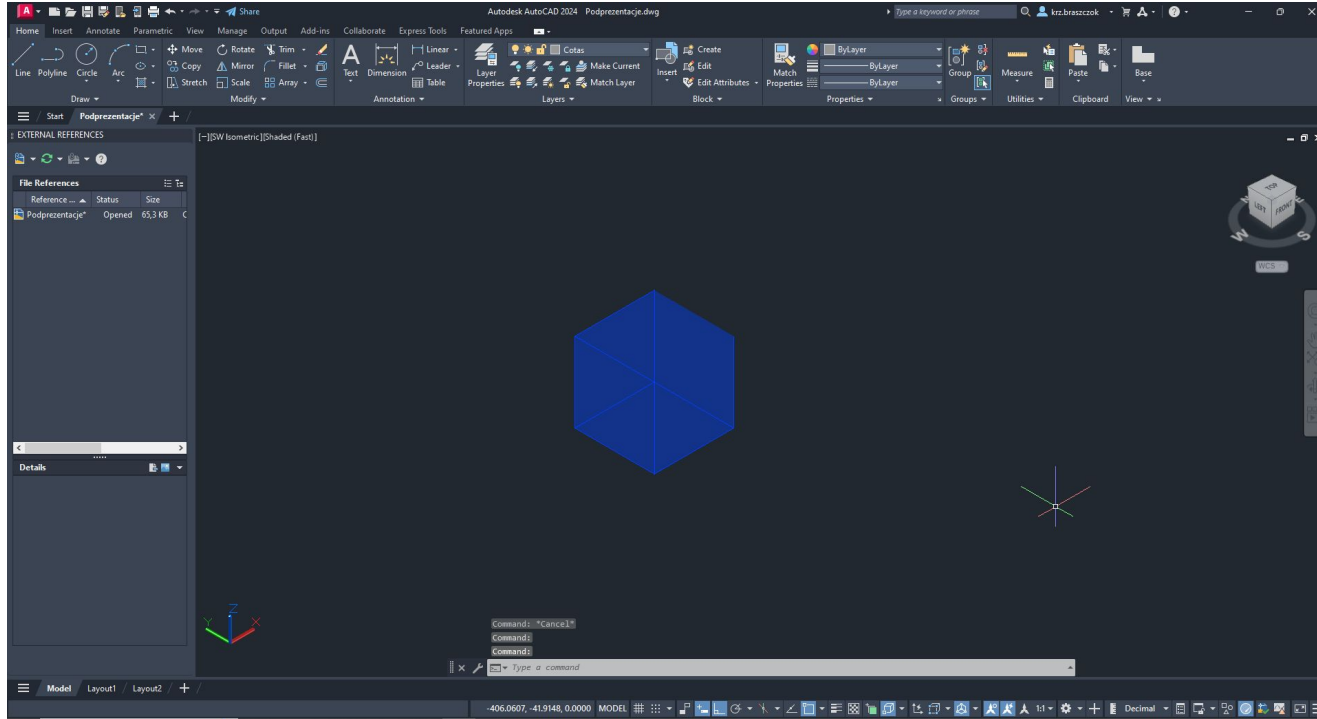


Repeat the process three times, appropriately rotating the entire solid so that the use of 3D Rotate is possible.

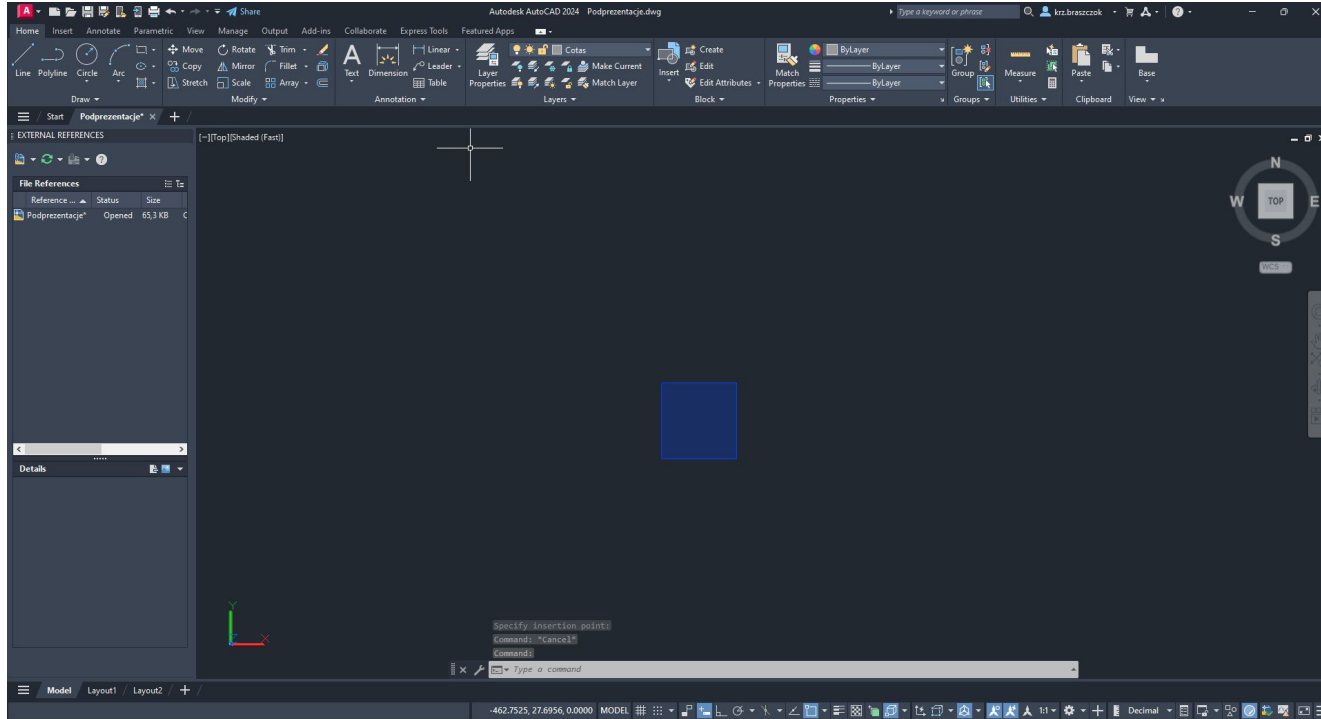


# Hexaedro

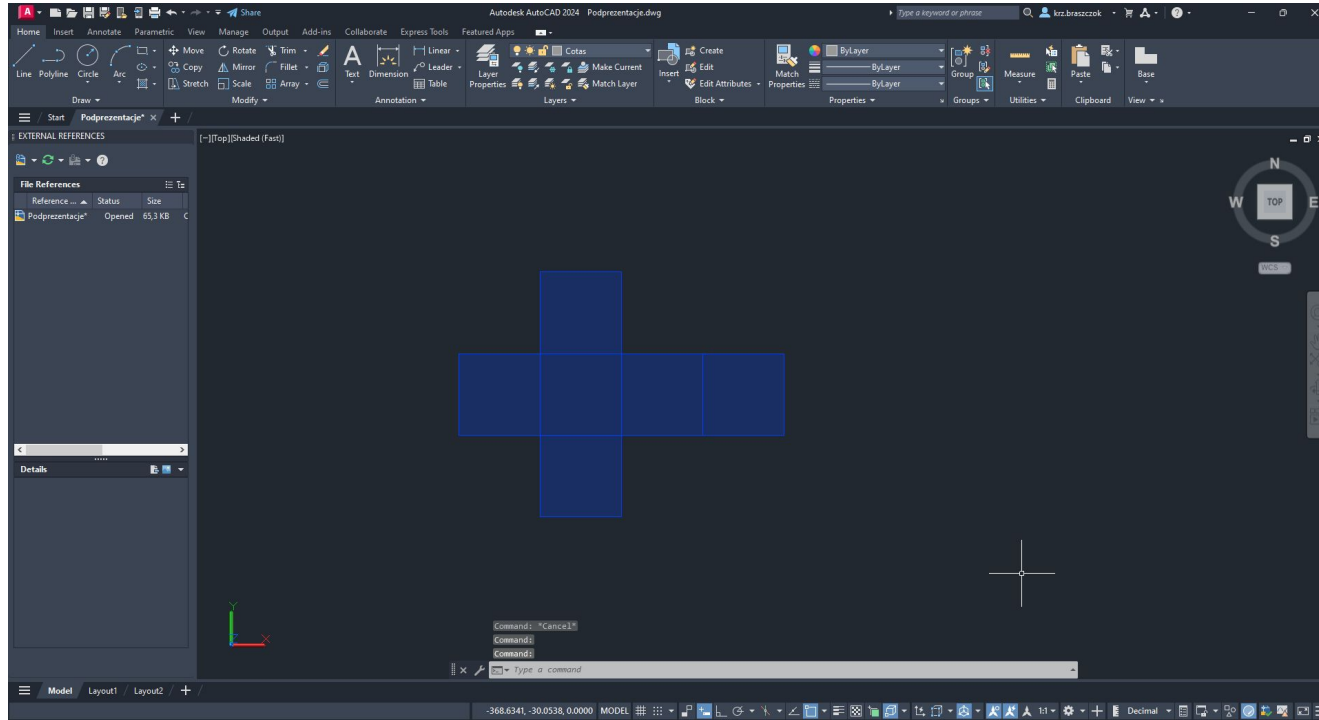
6 square faces, 8 vertices, and 12 edges.



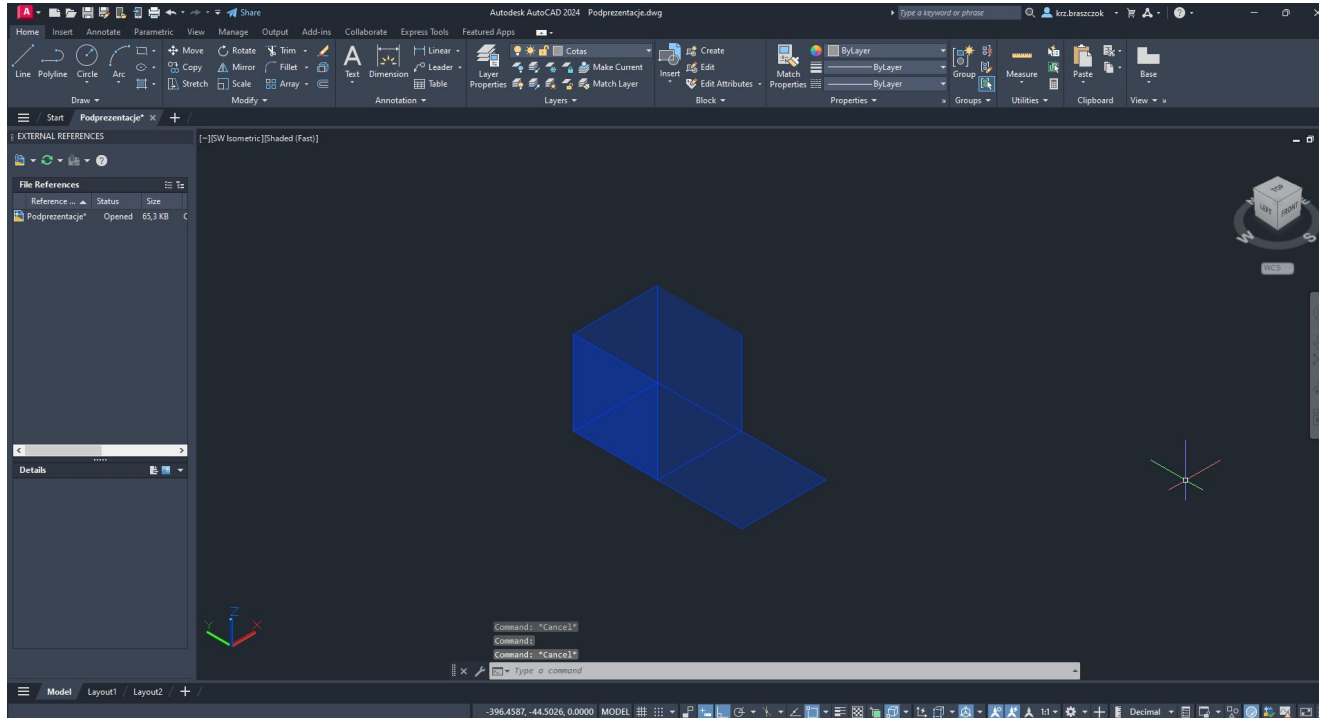
Create a square with sides of 10x10.



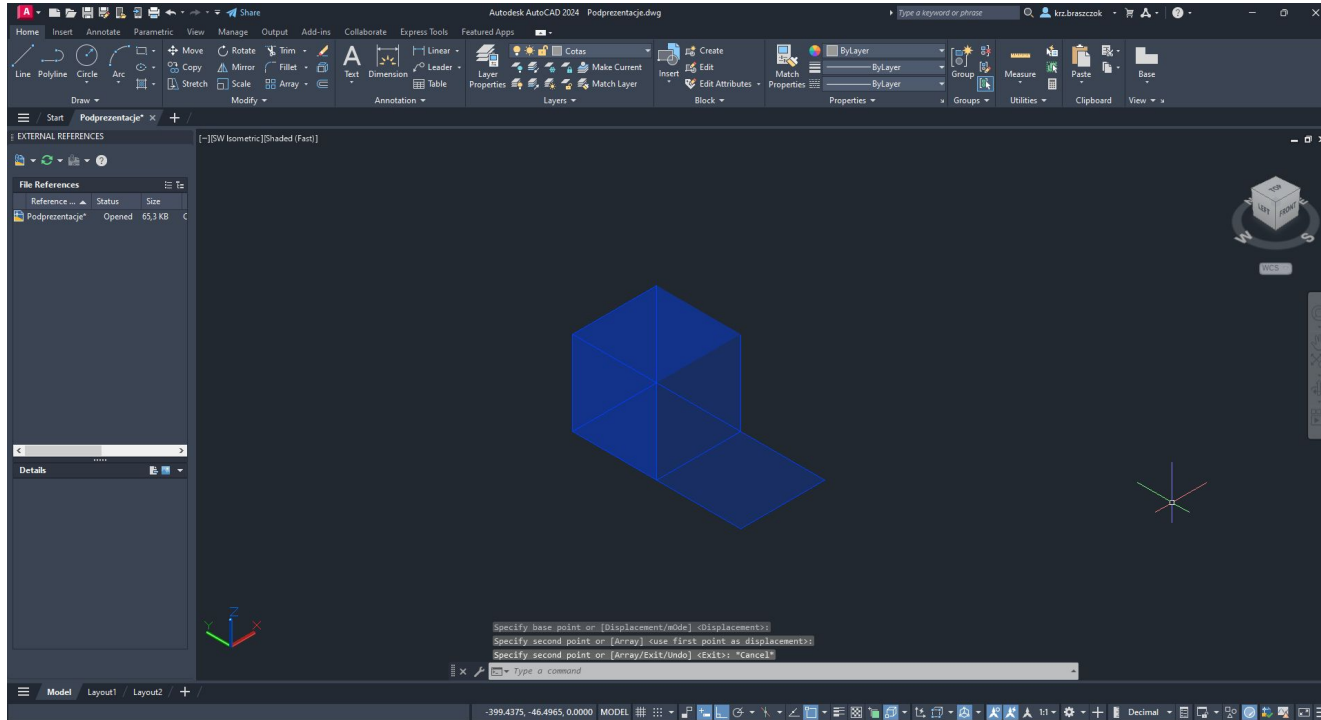
Create a grid of the cube using the Copy tool.



Using the 3D Rotate tool, rotate the sides of the cube accordingly.

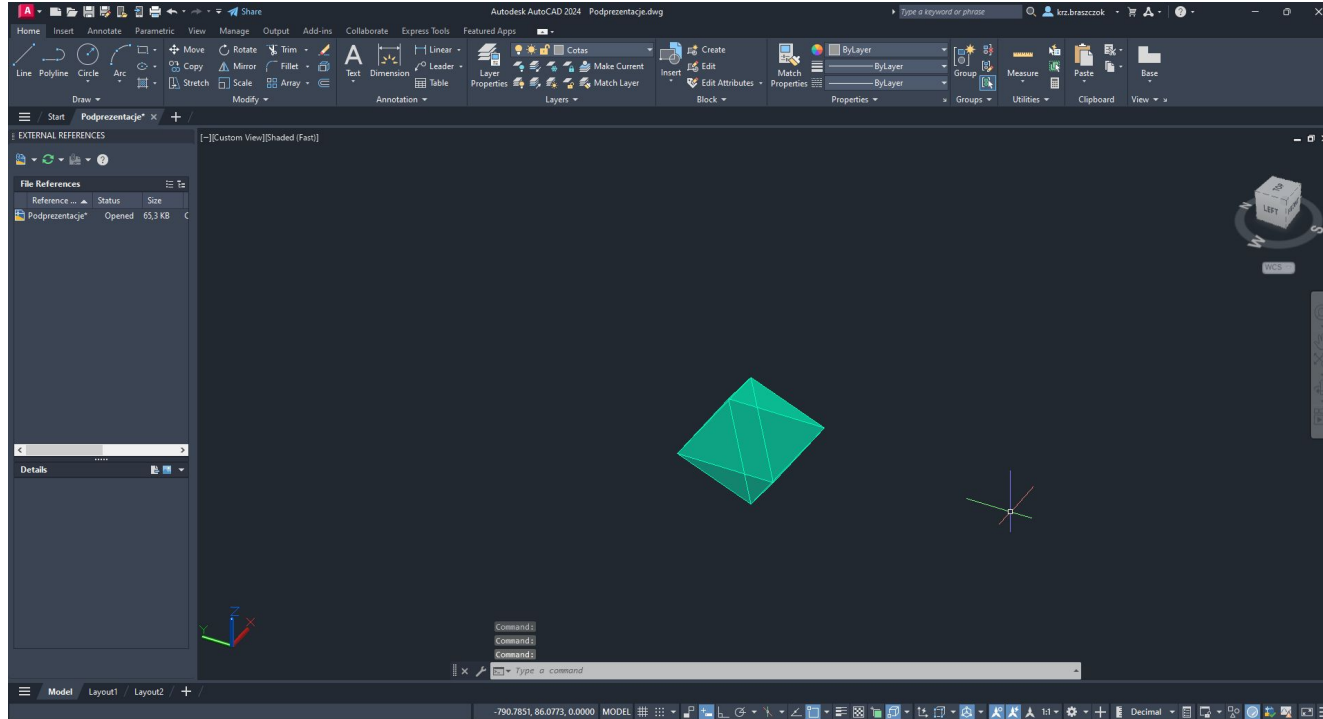


Create the top base of the cube using the Copy tool based on the bottom base.

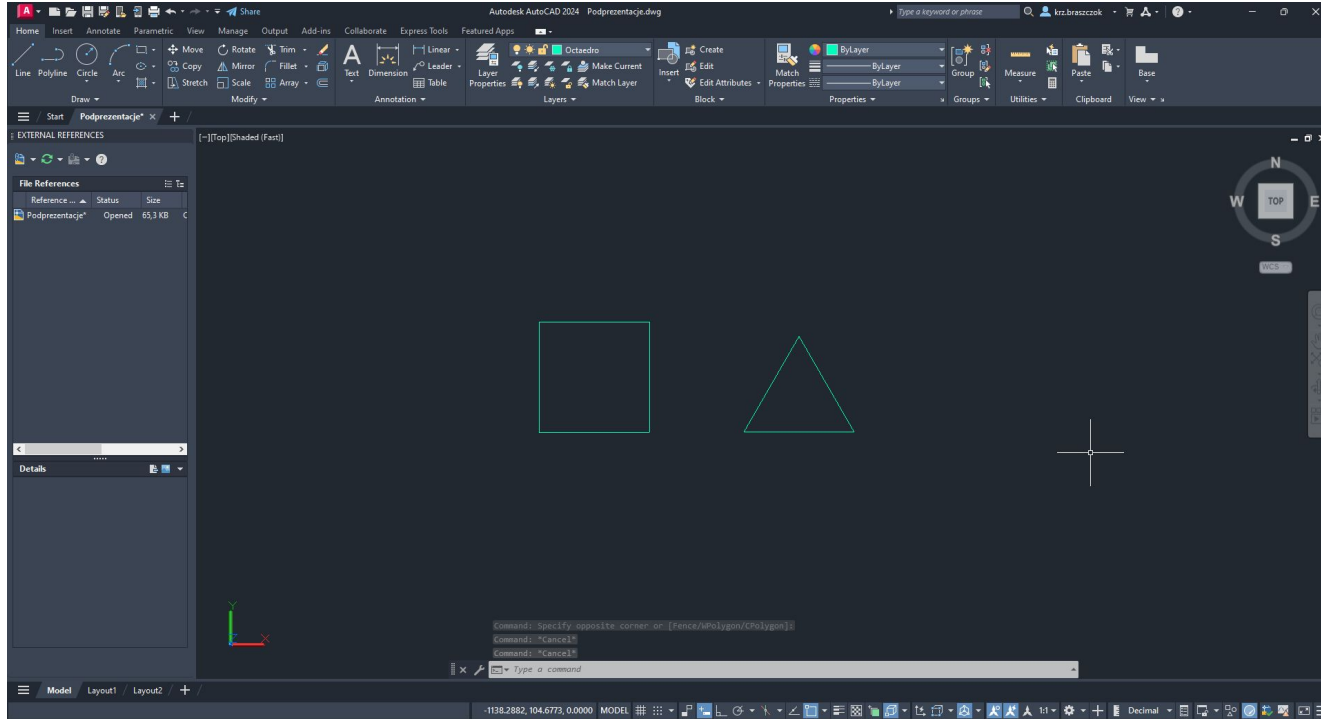


# Octaedro

8 triangular faces, 6 vertices, and 12 edges

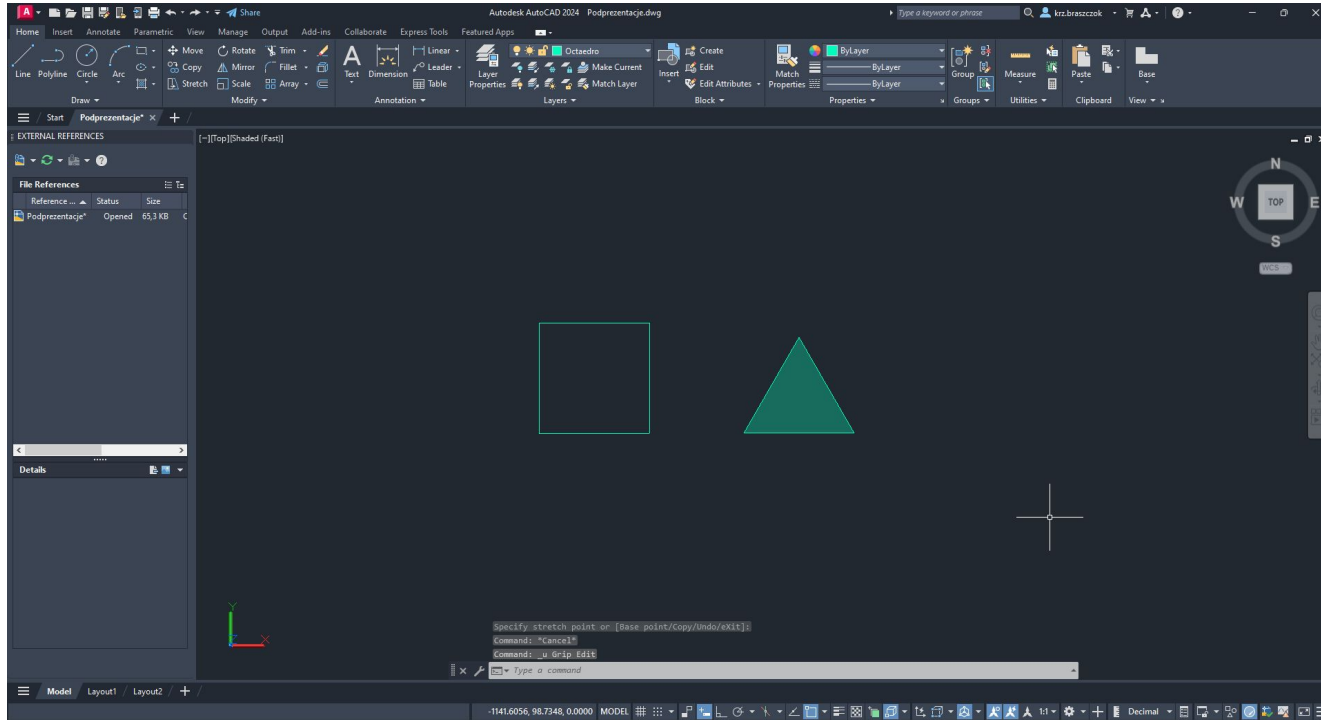


Create a square with a side length of 10 and a triangle with sides of 10

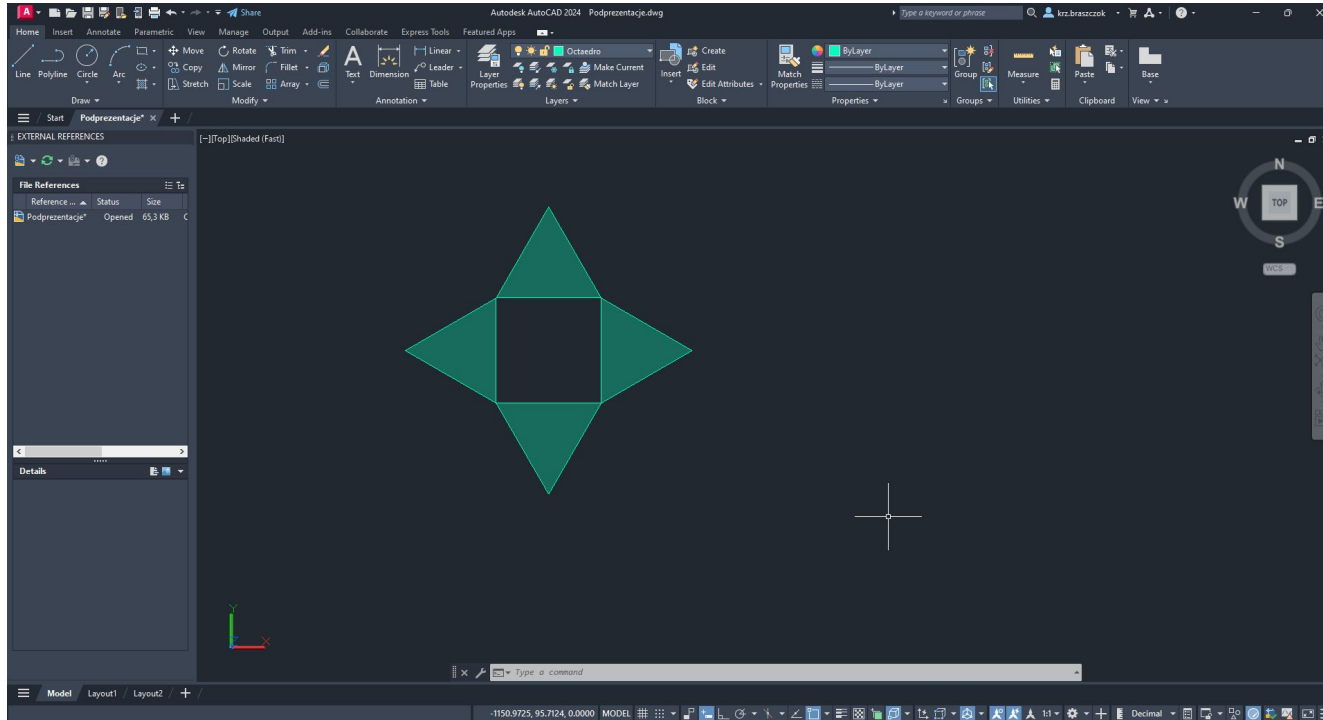




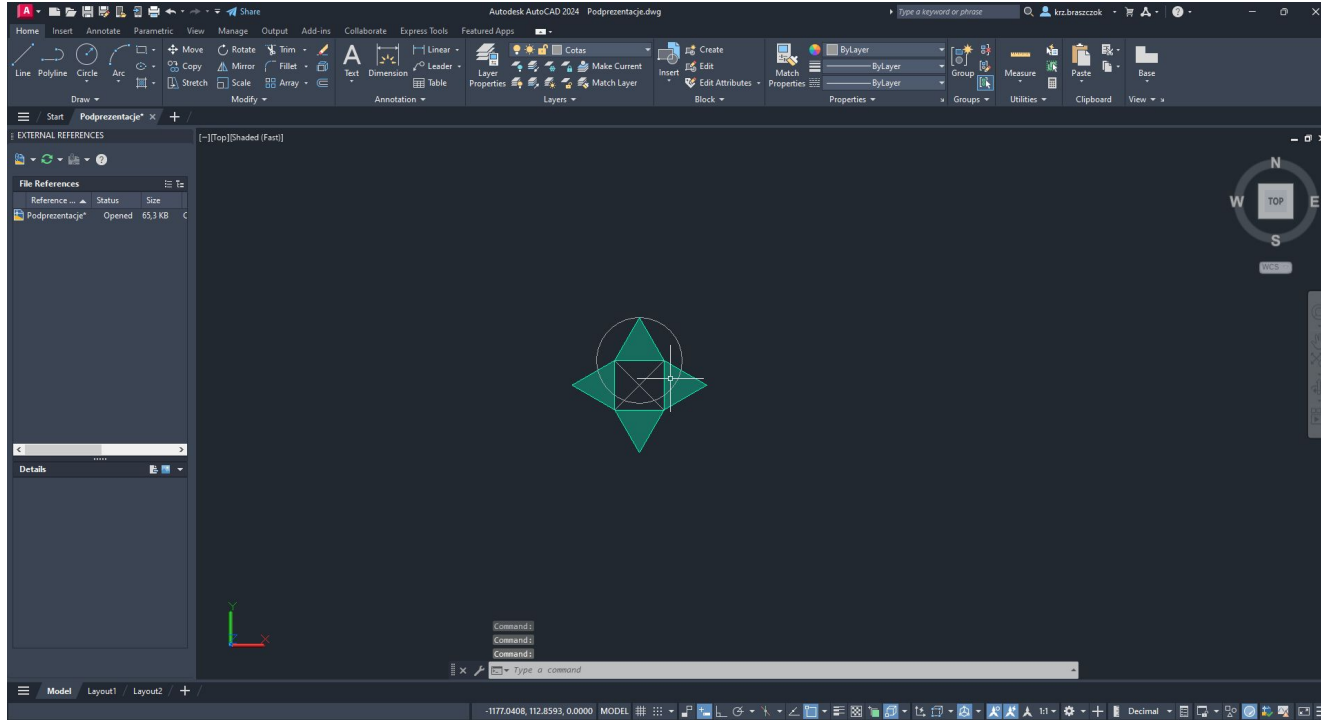
Fill both with a hatch pattern and adjust transparency.



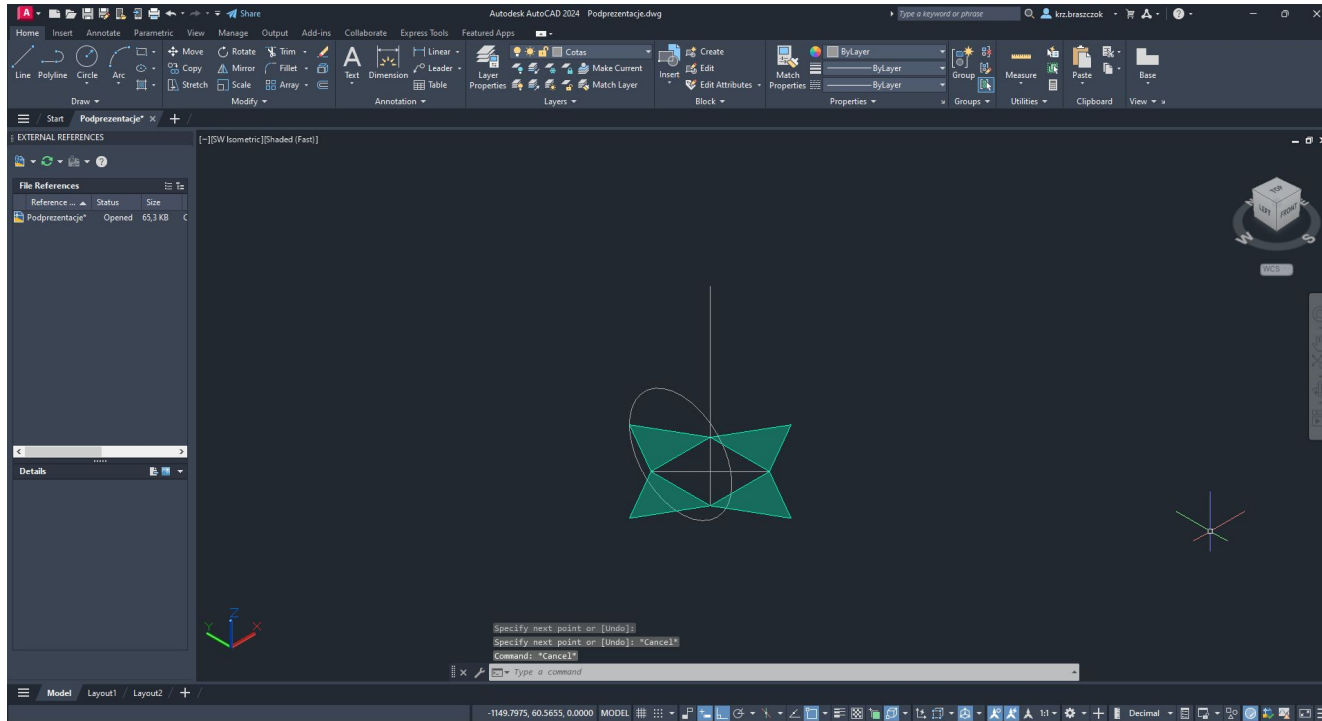
Using the copy and rotate tools, recreate the situation from the picture



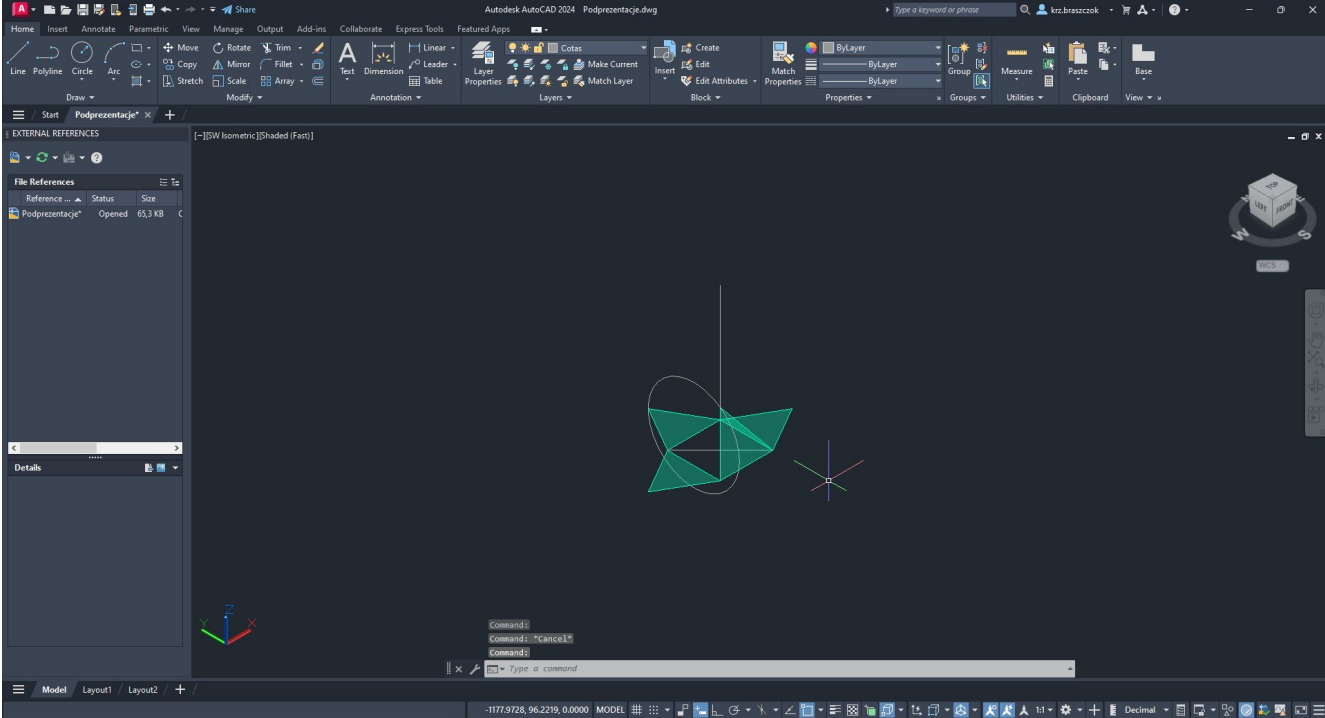
Draw the diagonals of the square and a circle extending from the center of the base of the triangle to its opposite vertex



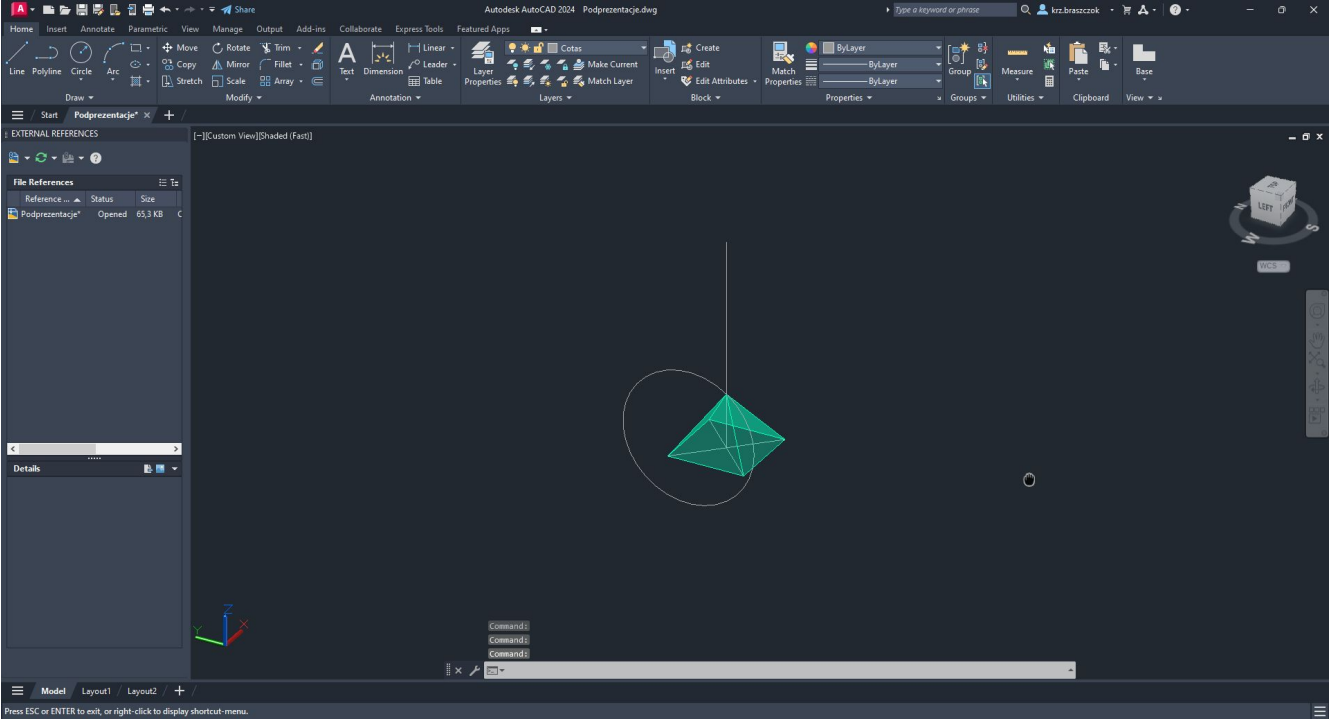
## Draw a vertical guide line on the Y-axis



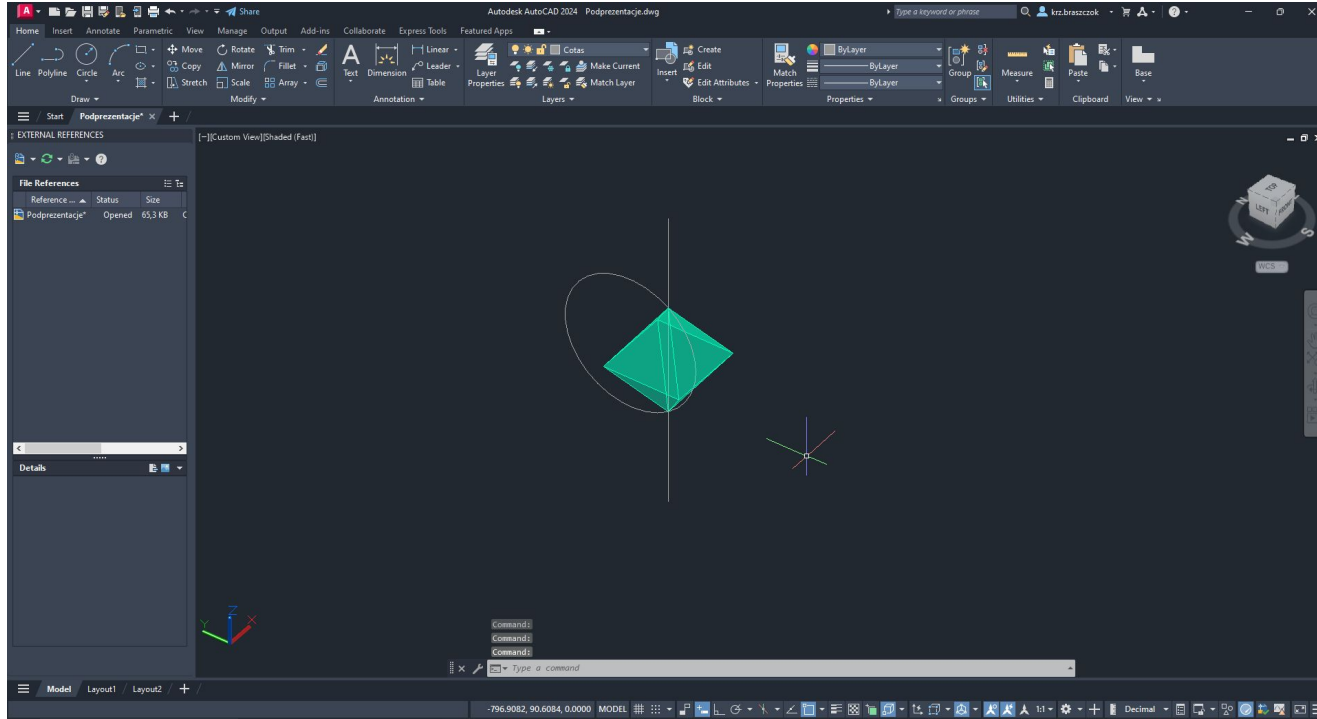
Use 3D Rotate to rotate the triangle towards the point of intersection between the circle and the vertical line



Repeat the action 4 times

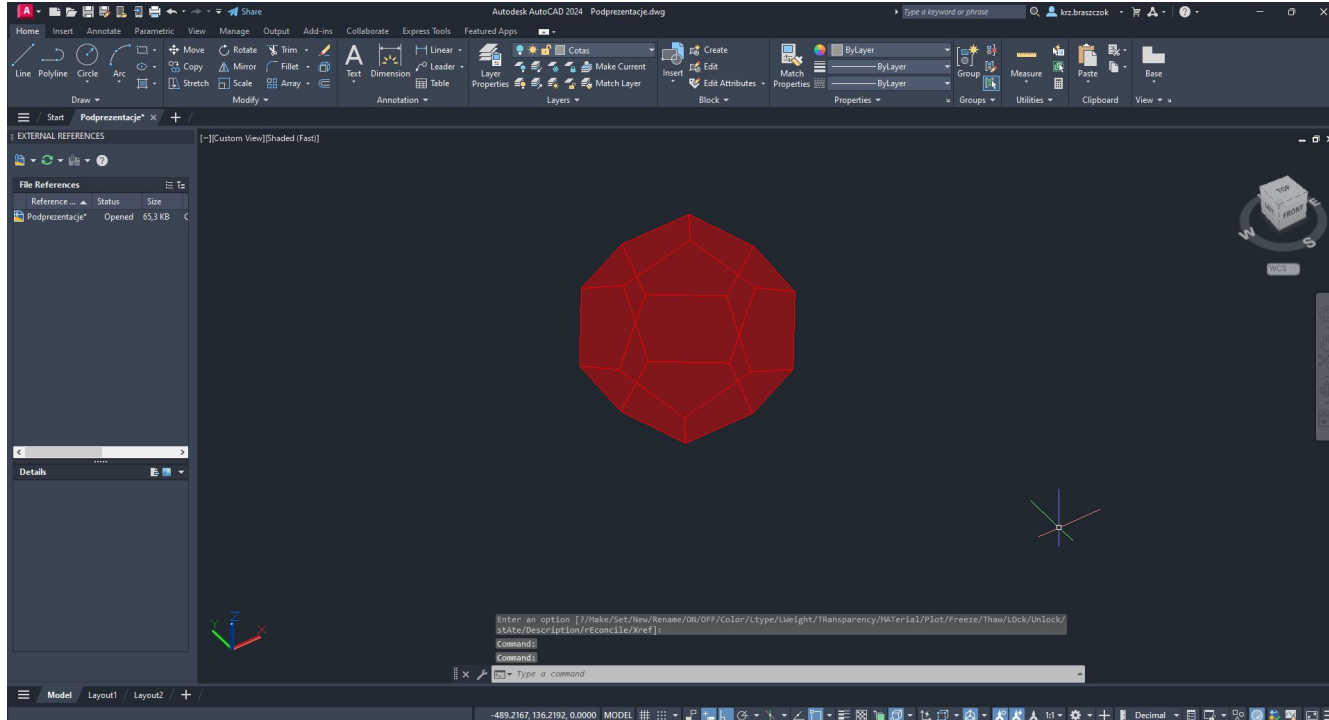


## Use 3D Mirror to copy the missing part downwards



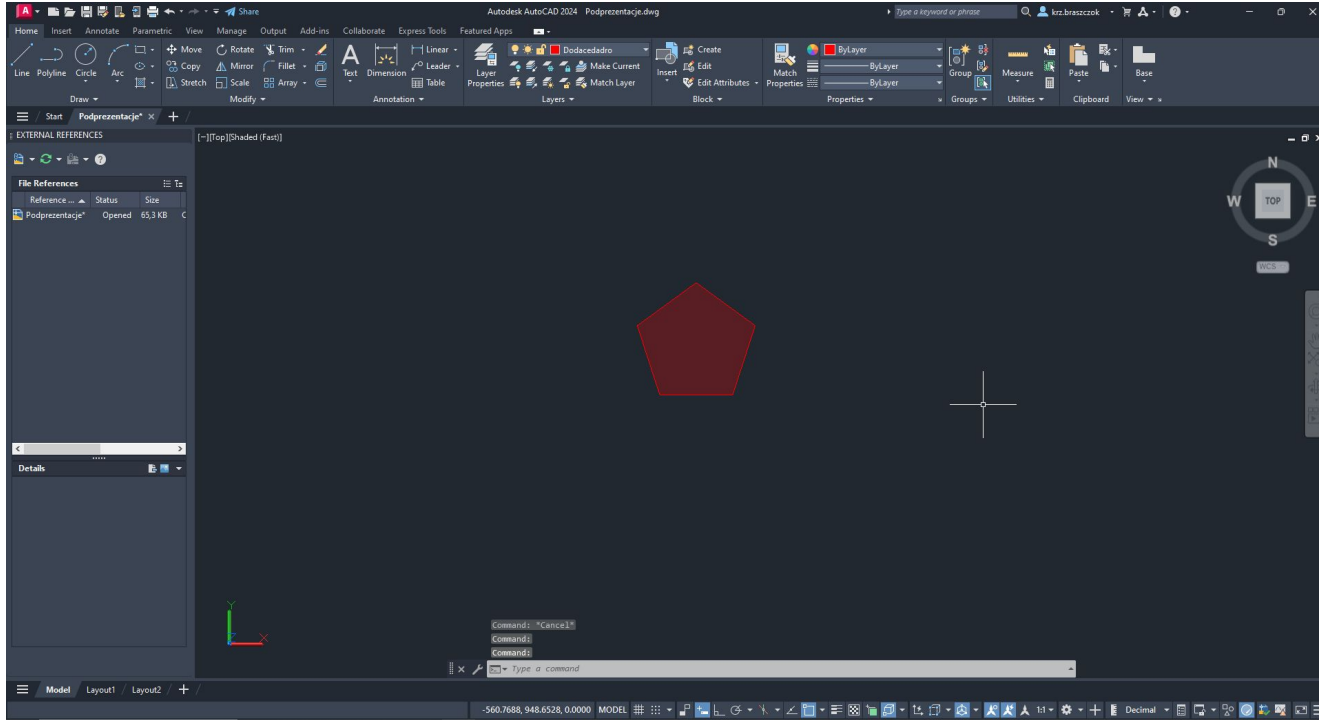
# Dodeacedro

12 pentagonal faces, 20 vertices, and 30 edges.

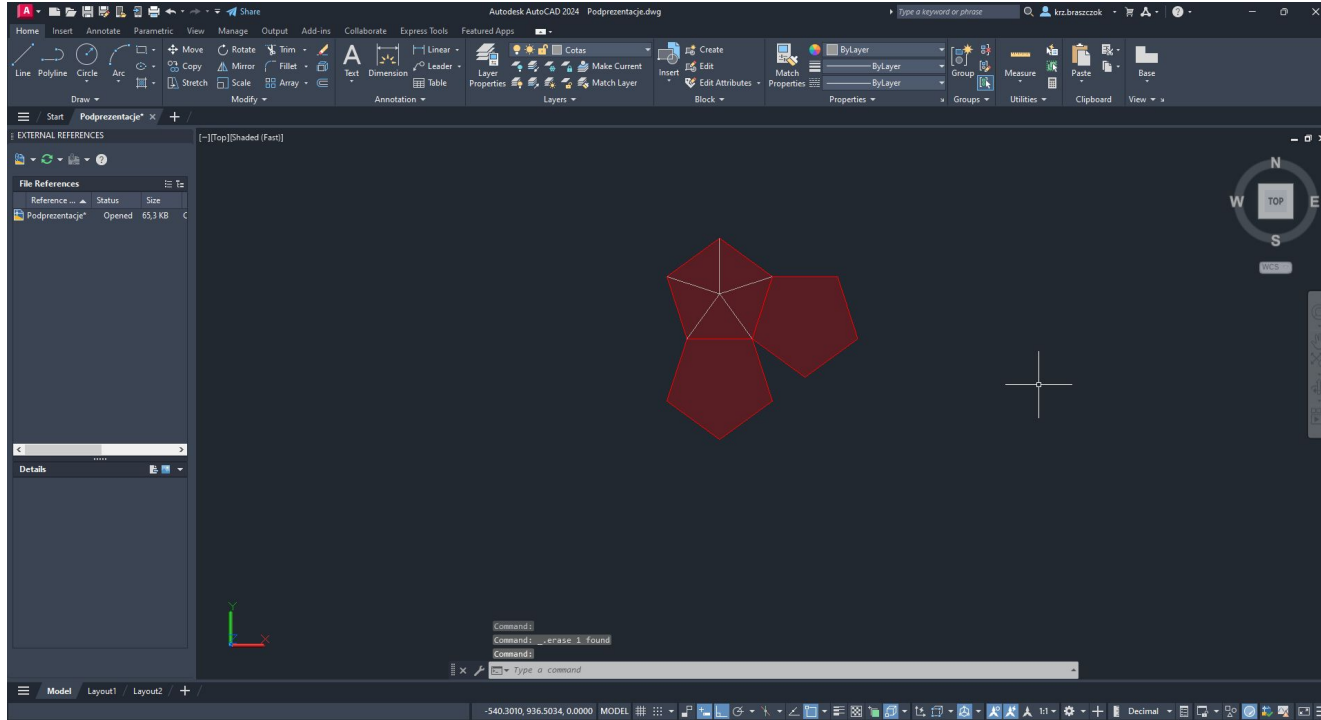




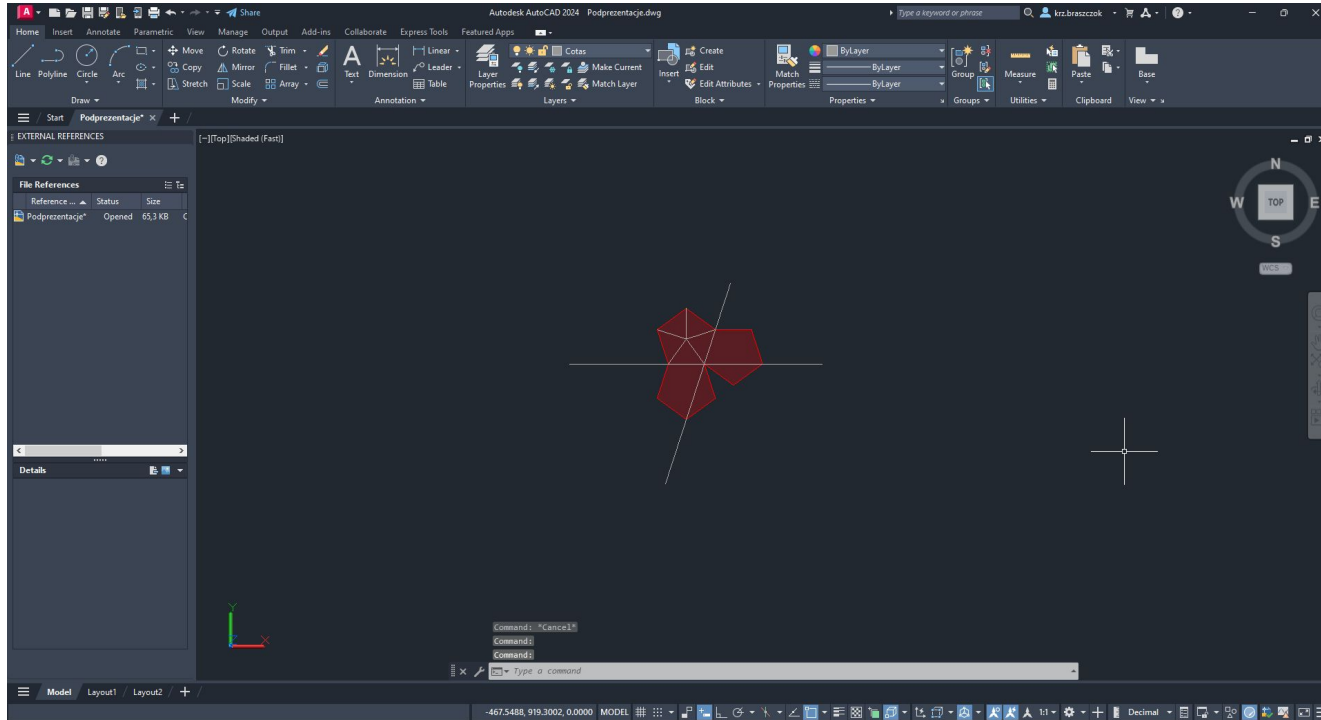
Draw a pentagon with a side length of 10 and fill it with hatch. Change transparency.



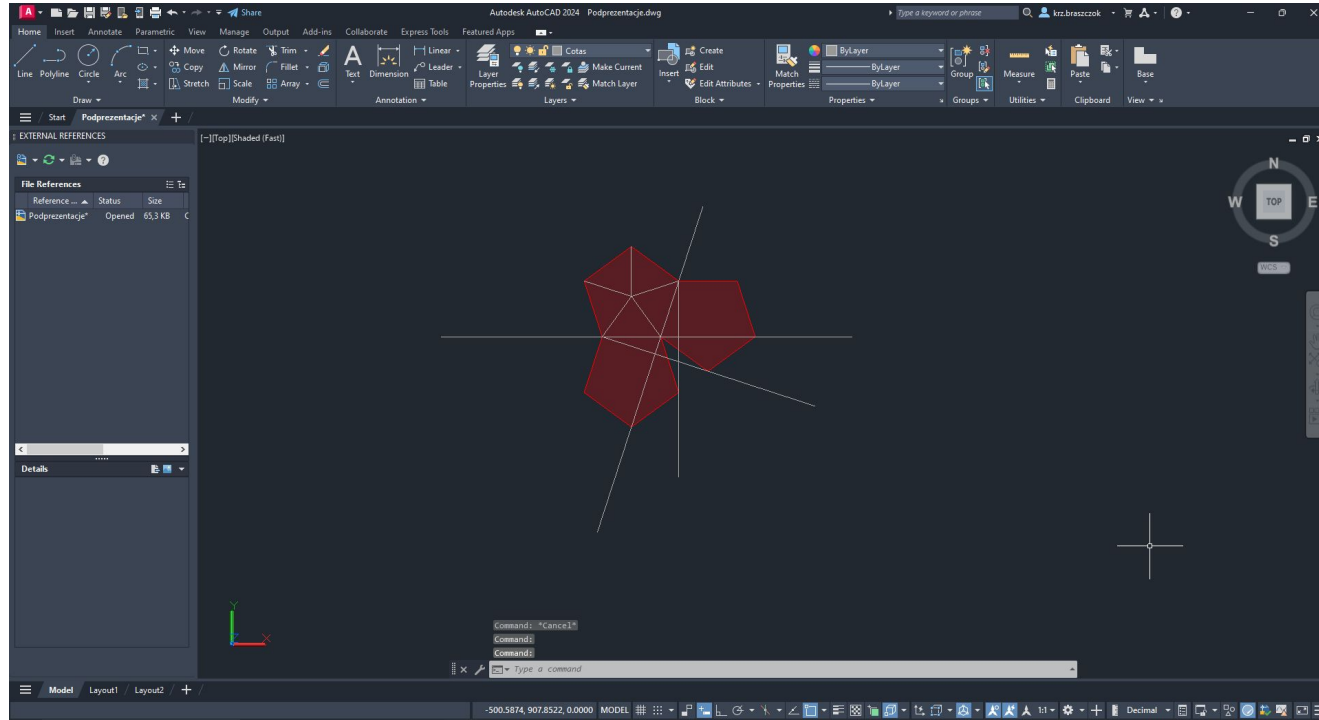
Using the Mirror and Copy tools, recreate the situation from the photo.



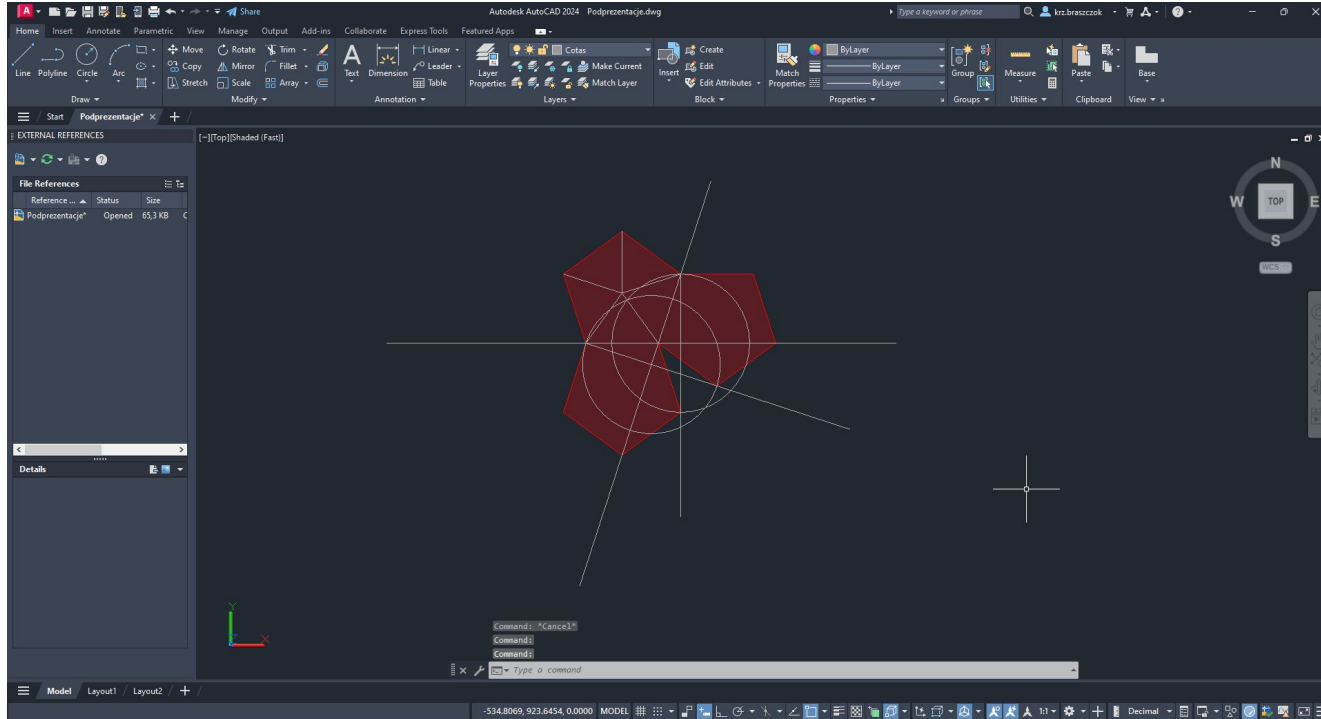
Extend guidelines in both directions to make them visible.



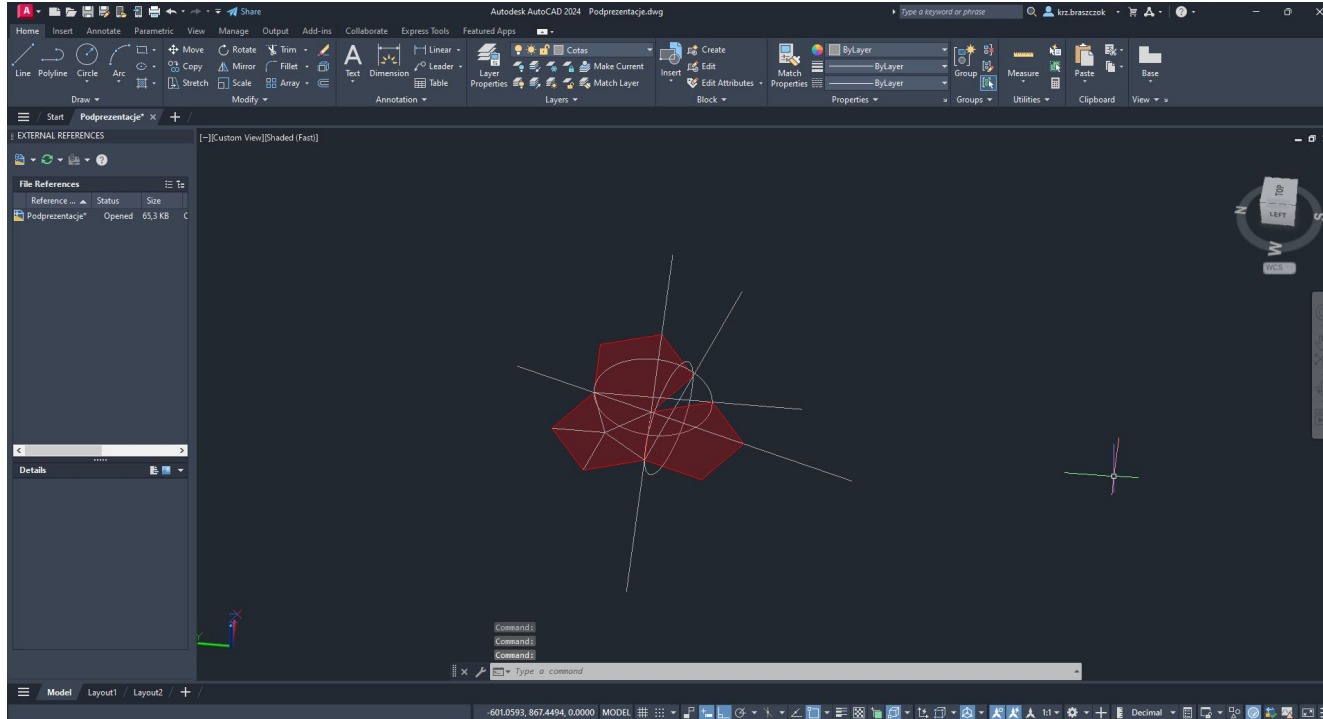
Draw a line from the left vertex at a right angle to the line created from the previous point.



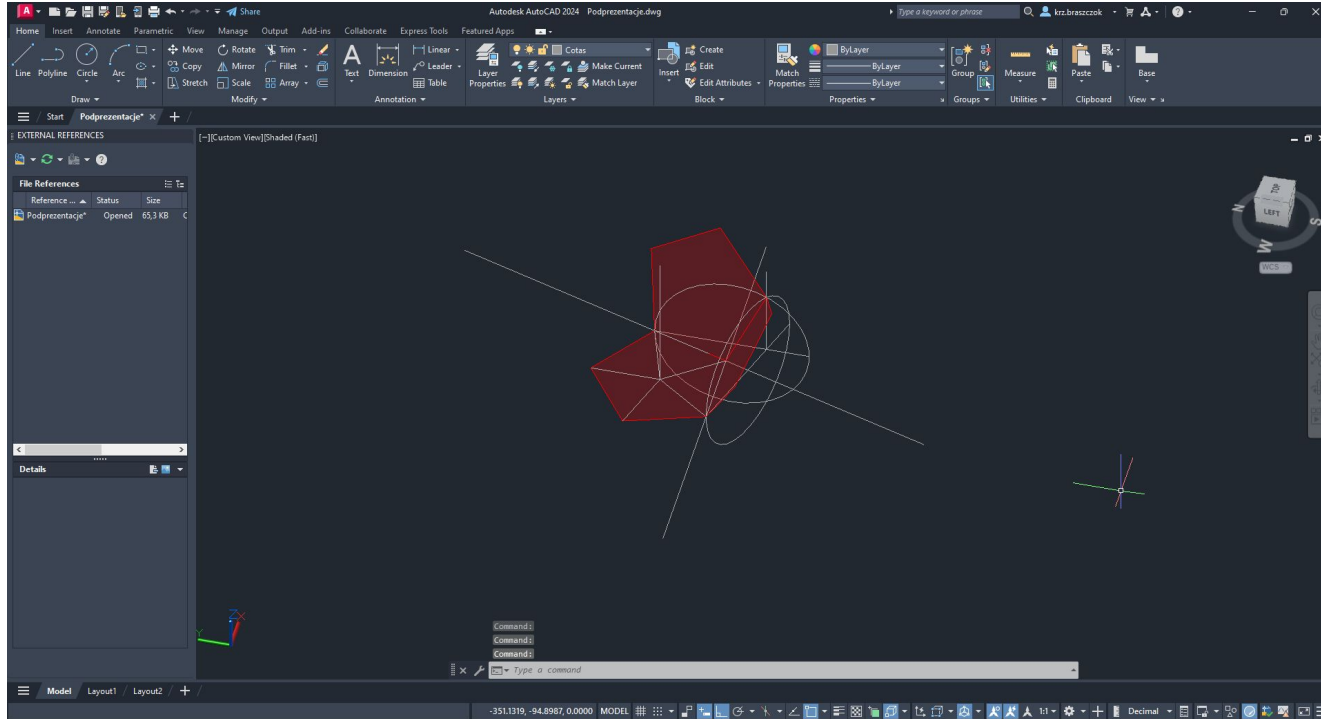
From the intersection point of the lines, draw two circles.v



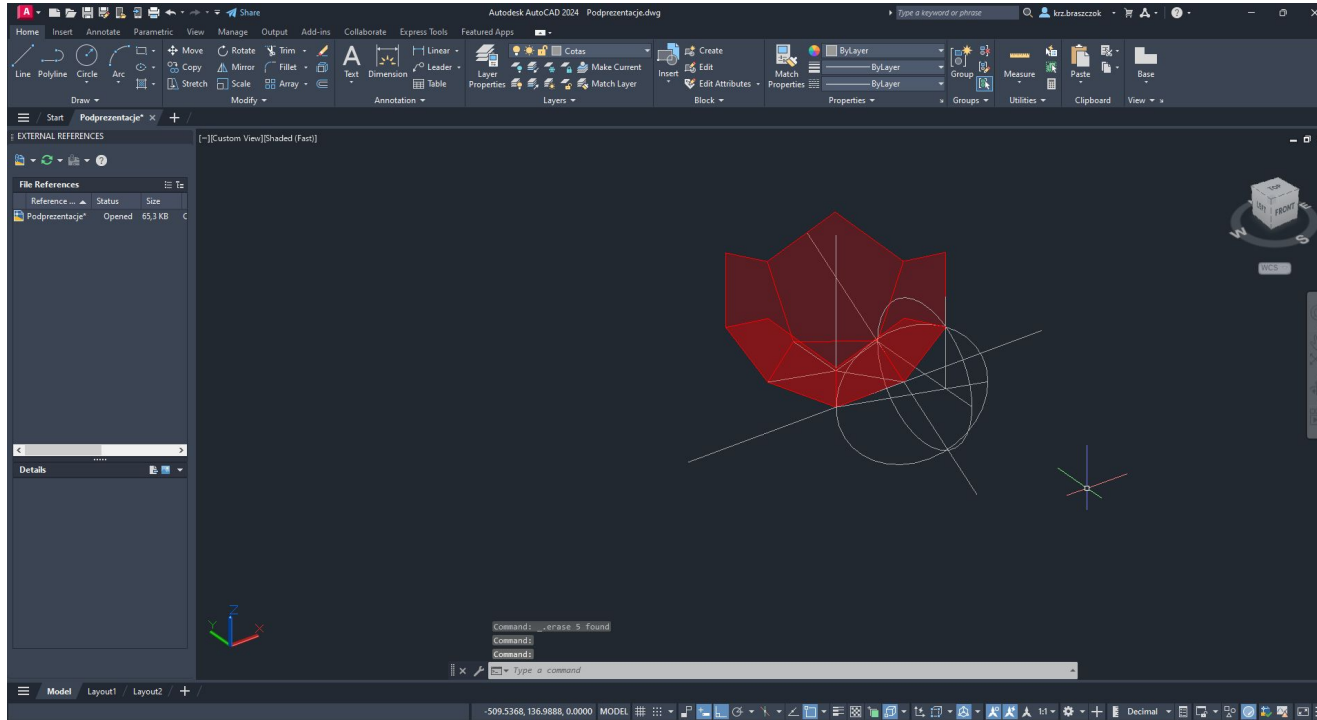
Rotate the circles by 90 degrees using 3D Rotate.



Align the plane to the created point using 3D Rotate.

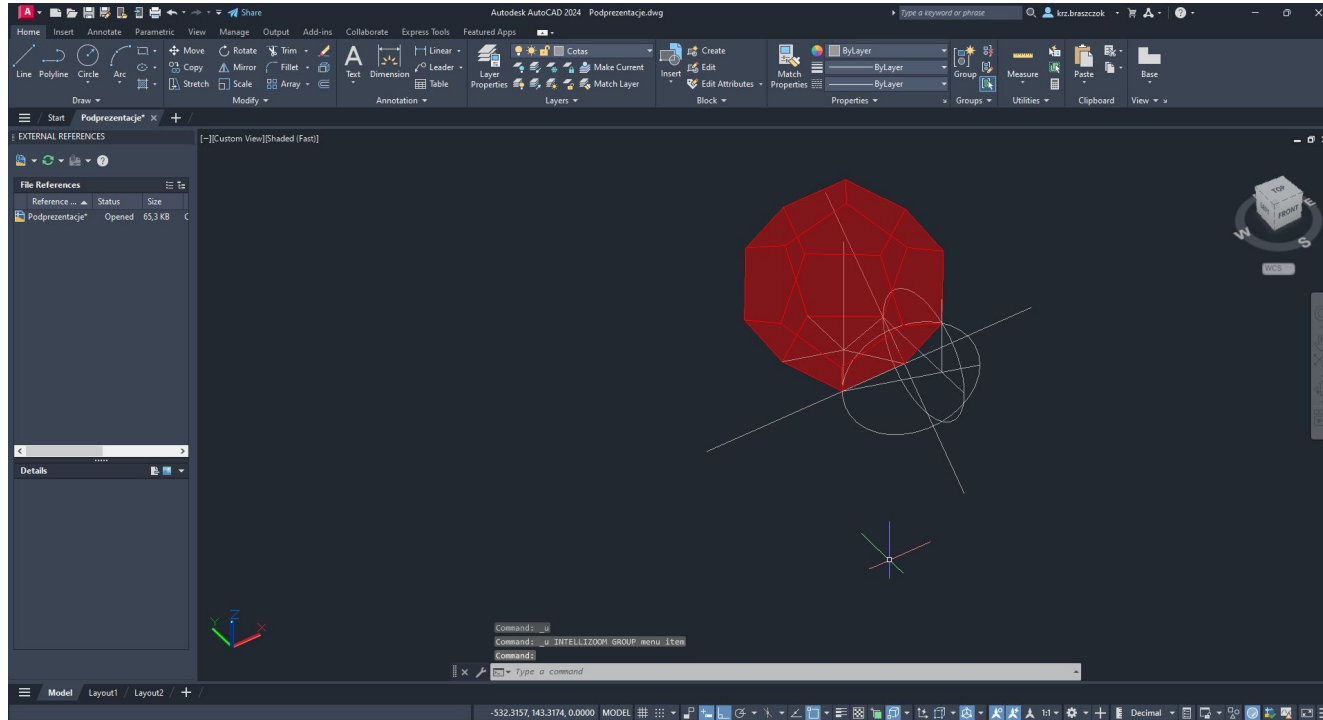


Repeat the scenario three times or use the 3D Array tool



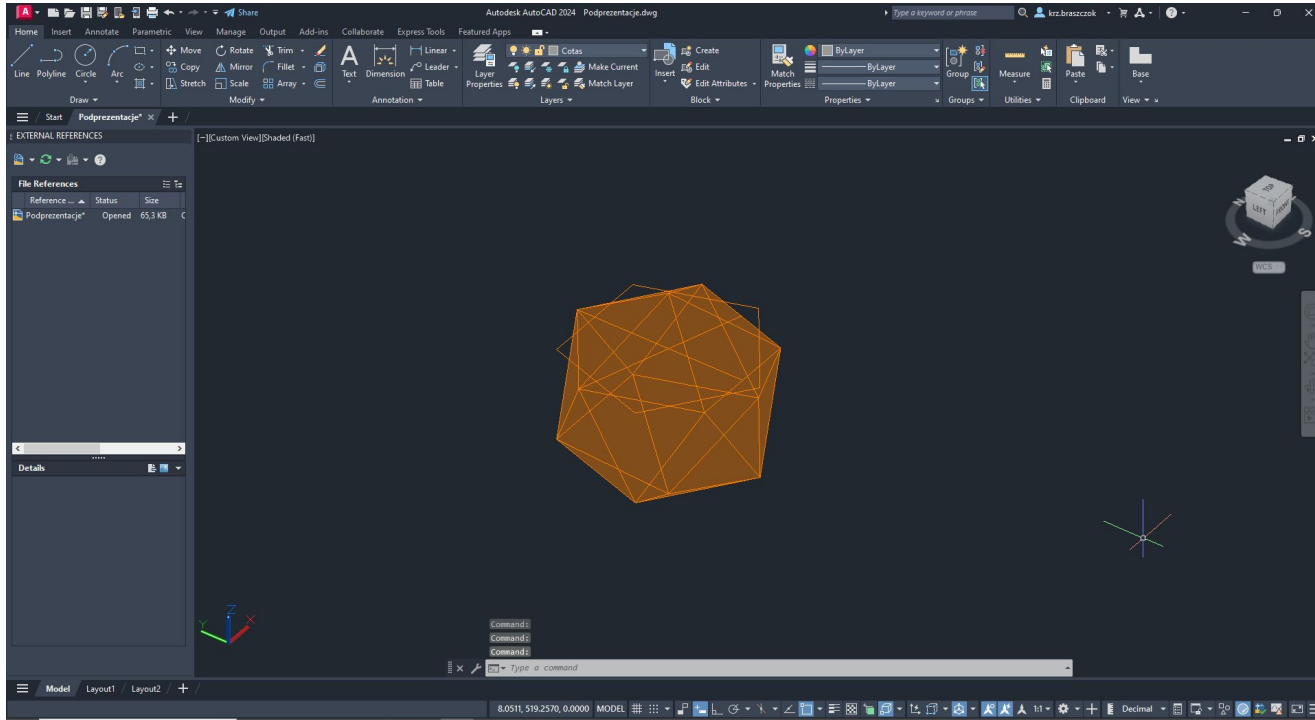


# Complete the missing part using 3D Mirror

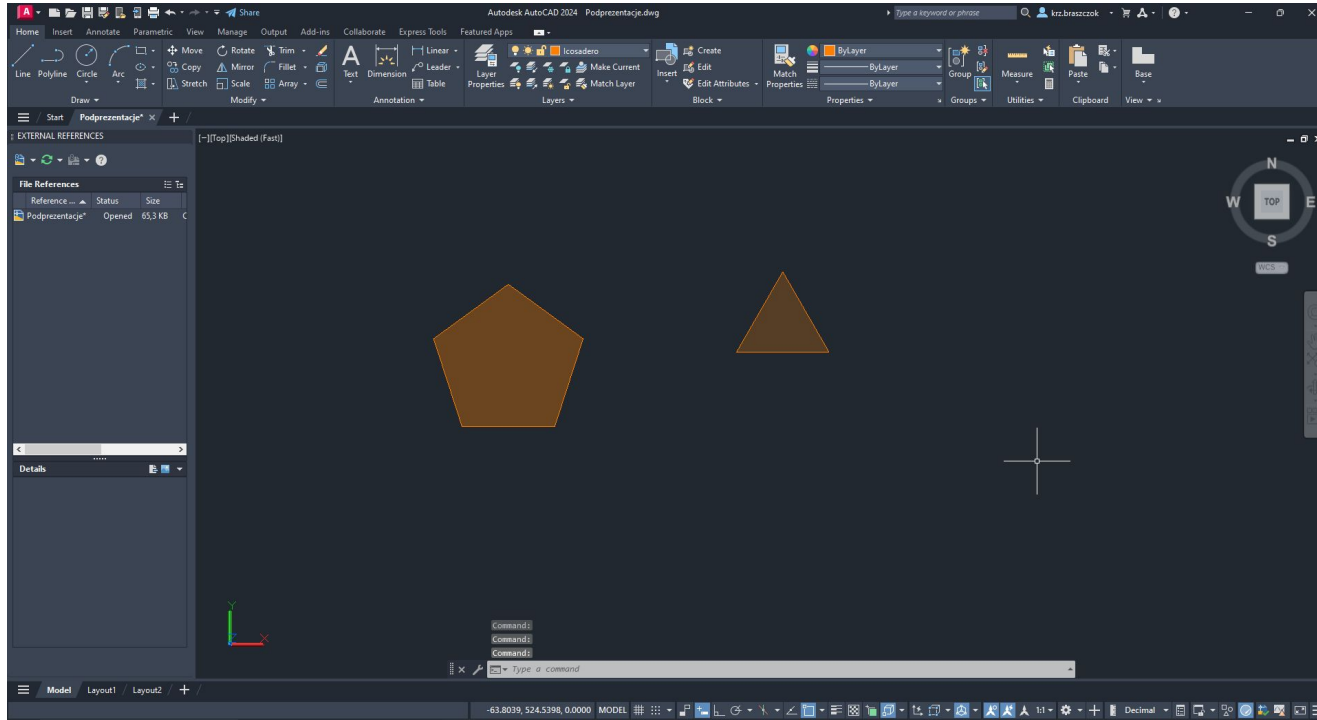


# Icosaedro

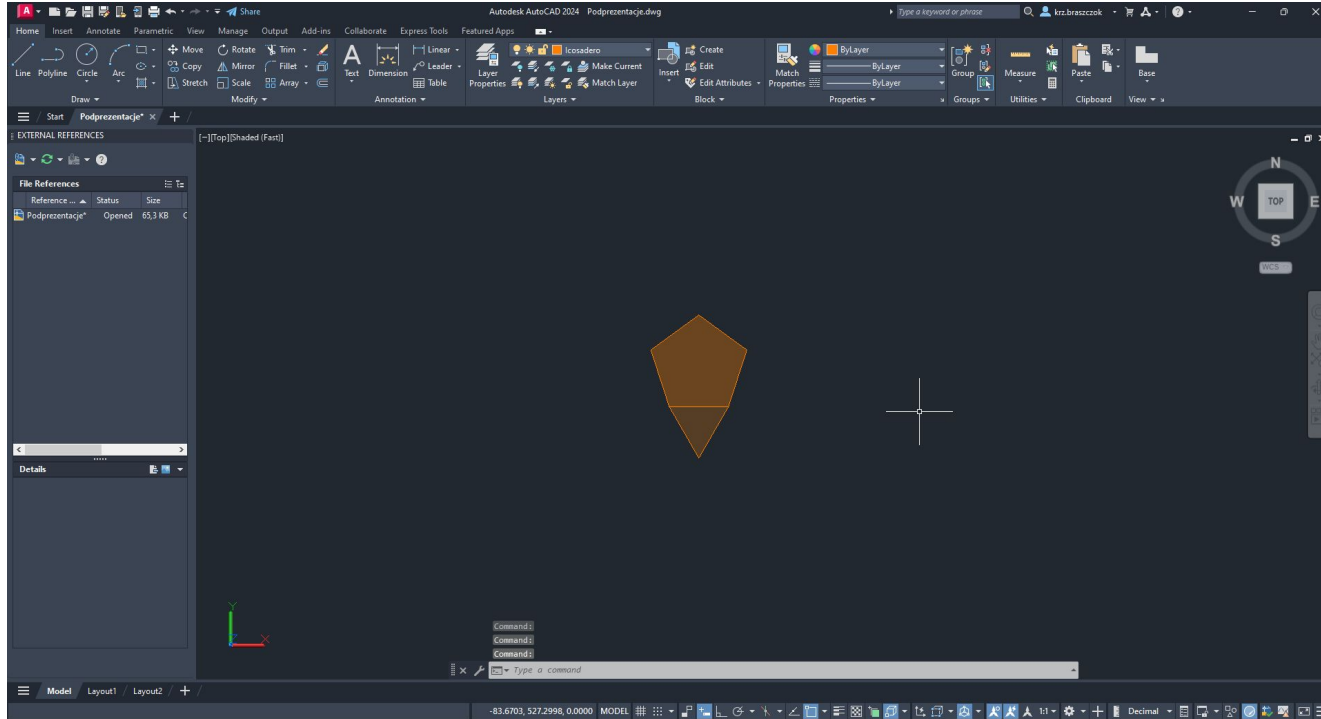
20 triangular faces, 12 vertices, and 30 edges



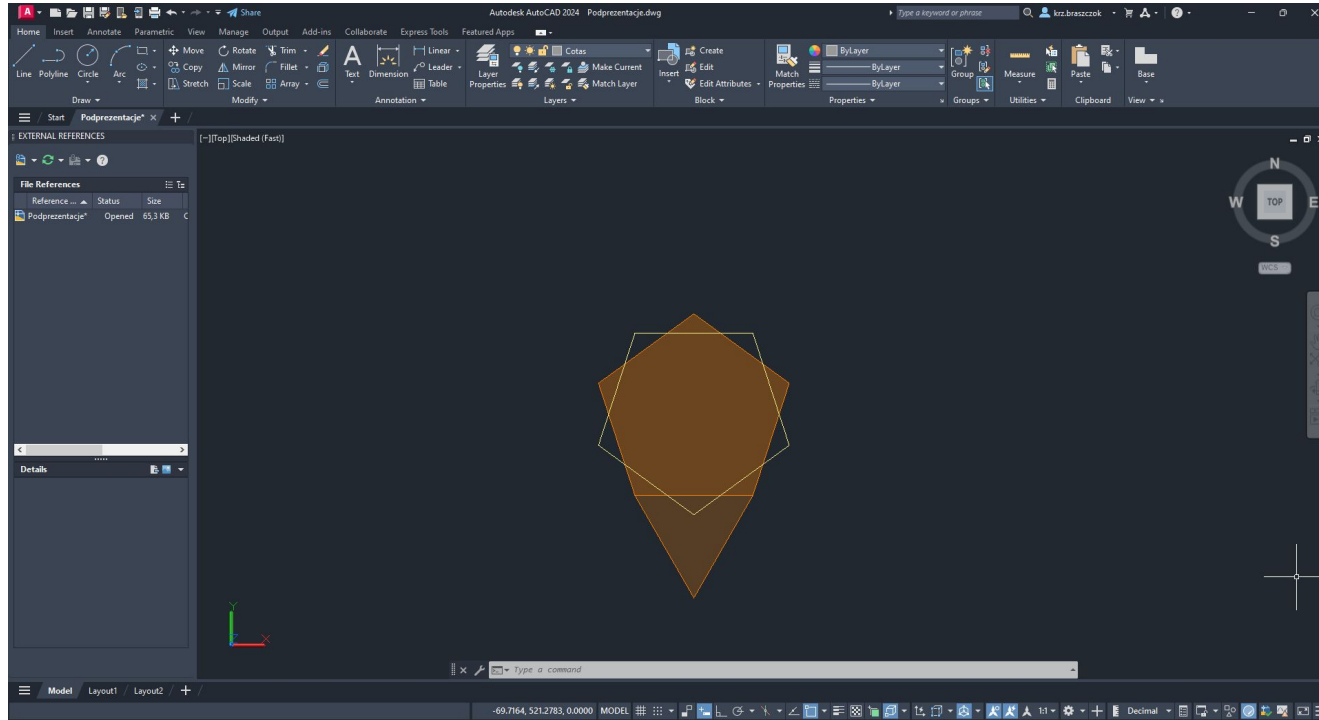
Create one pentagon with sides of 10 and one triangle with sides of 10. Fill it with hatch and change transparency



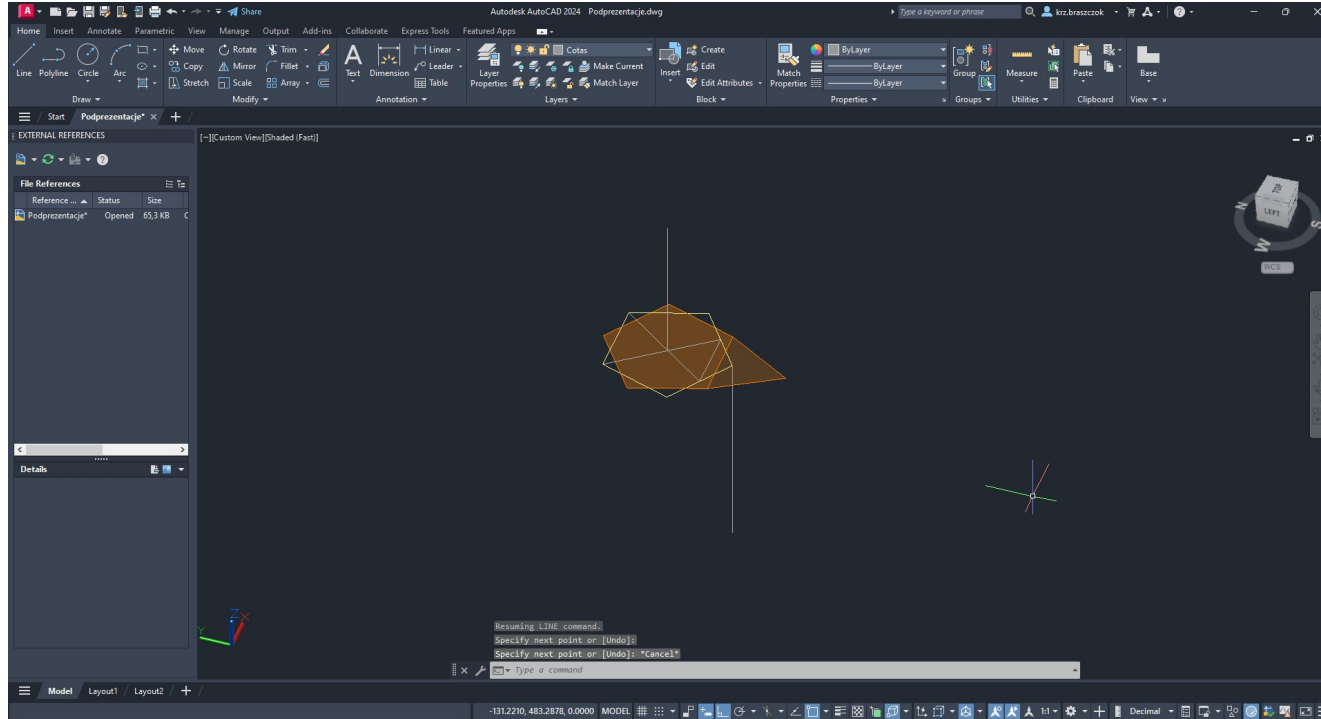
Rotate the triangle and align it to fit the pentagon



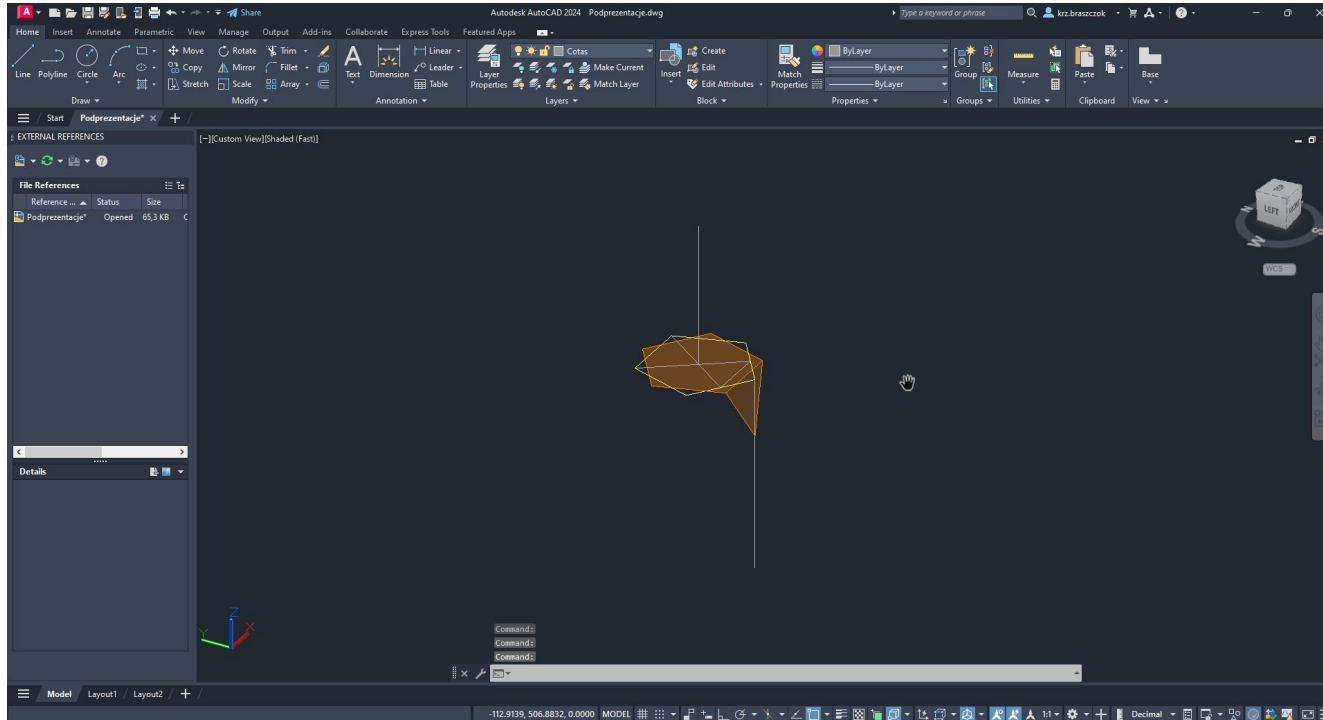
Draw a second pentagon and rotate it by 180 degrees so that their centers coincide



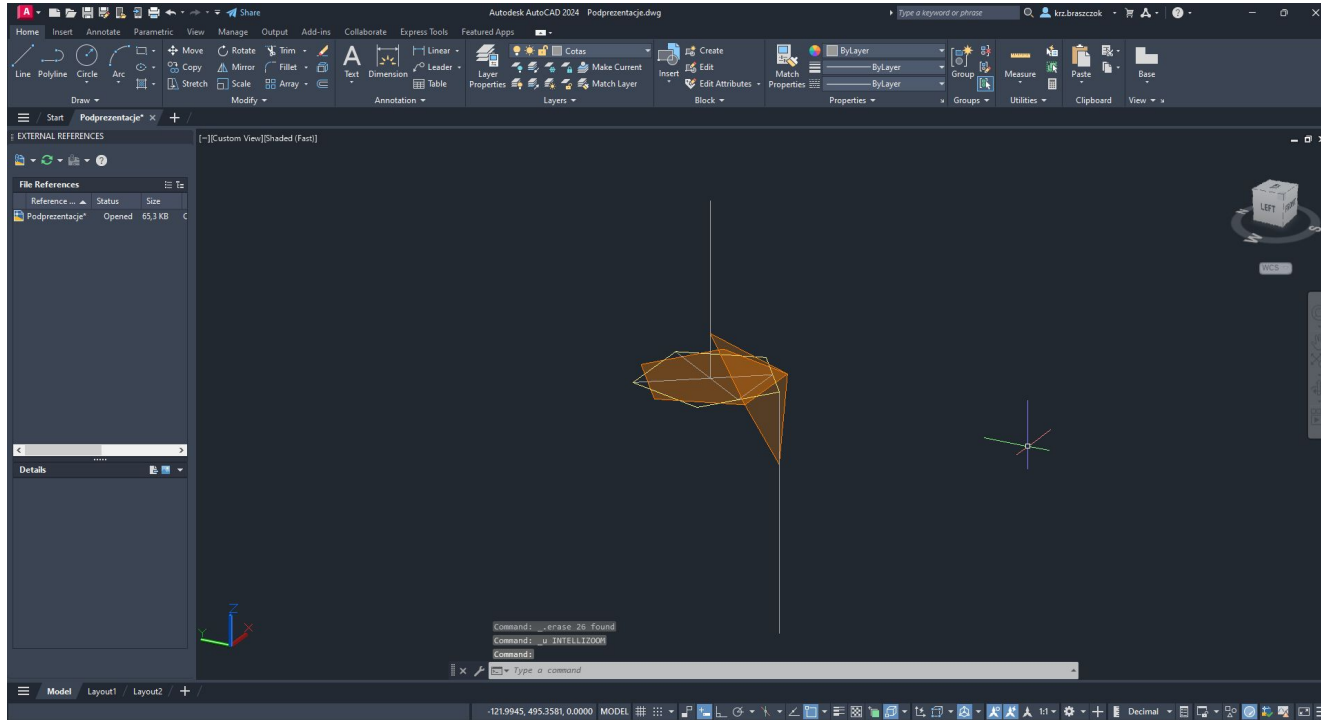
## Draw 2 vertical guide lines



Lower the triangle using 3D Rotate to the line. Use the 'nearest' command.

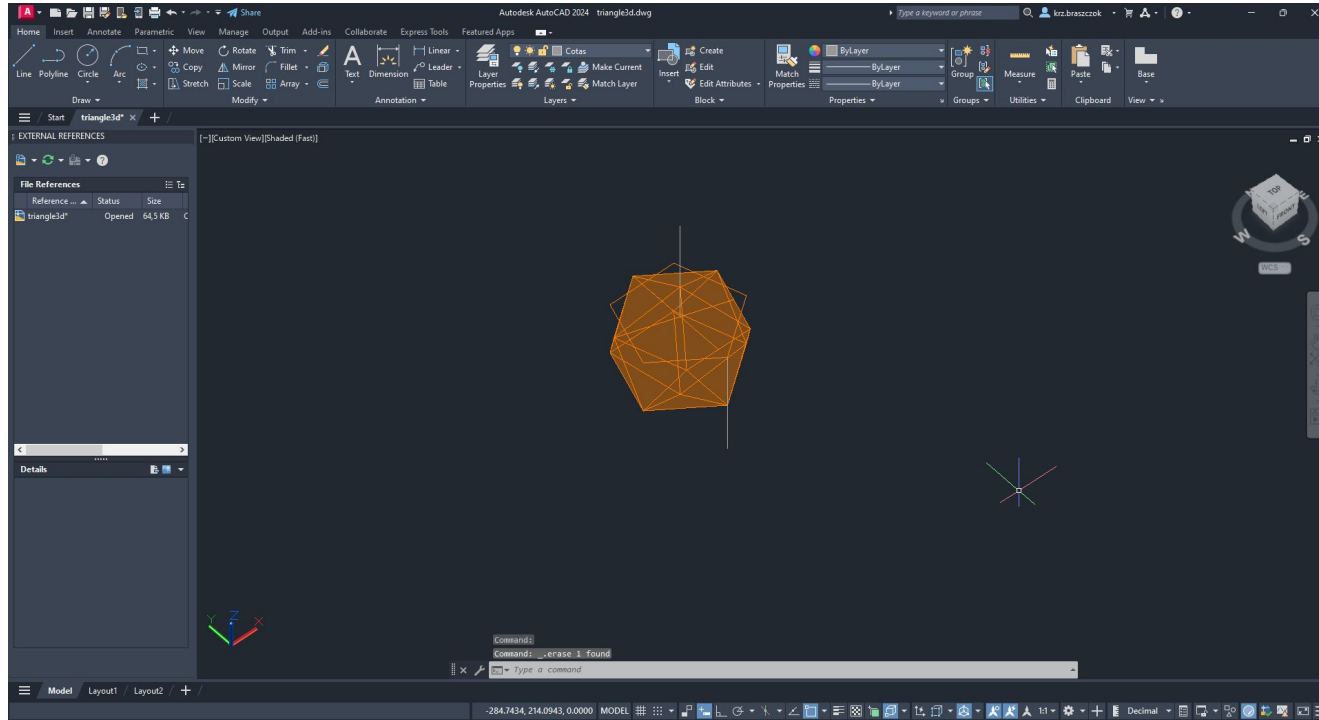


Similarly, raise the triangle using 3D Rotate to the line. Use the 'nearest' command.

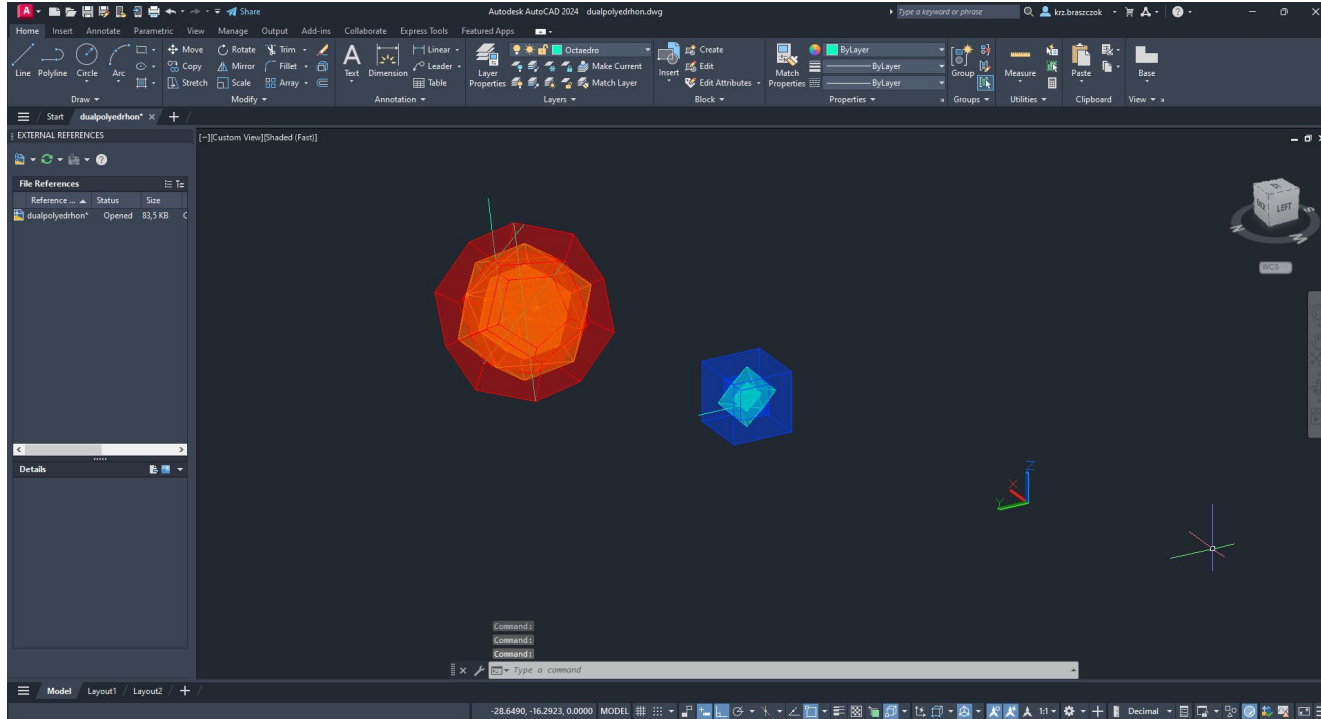




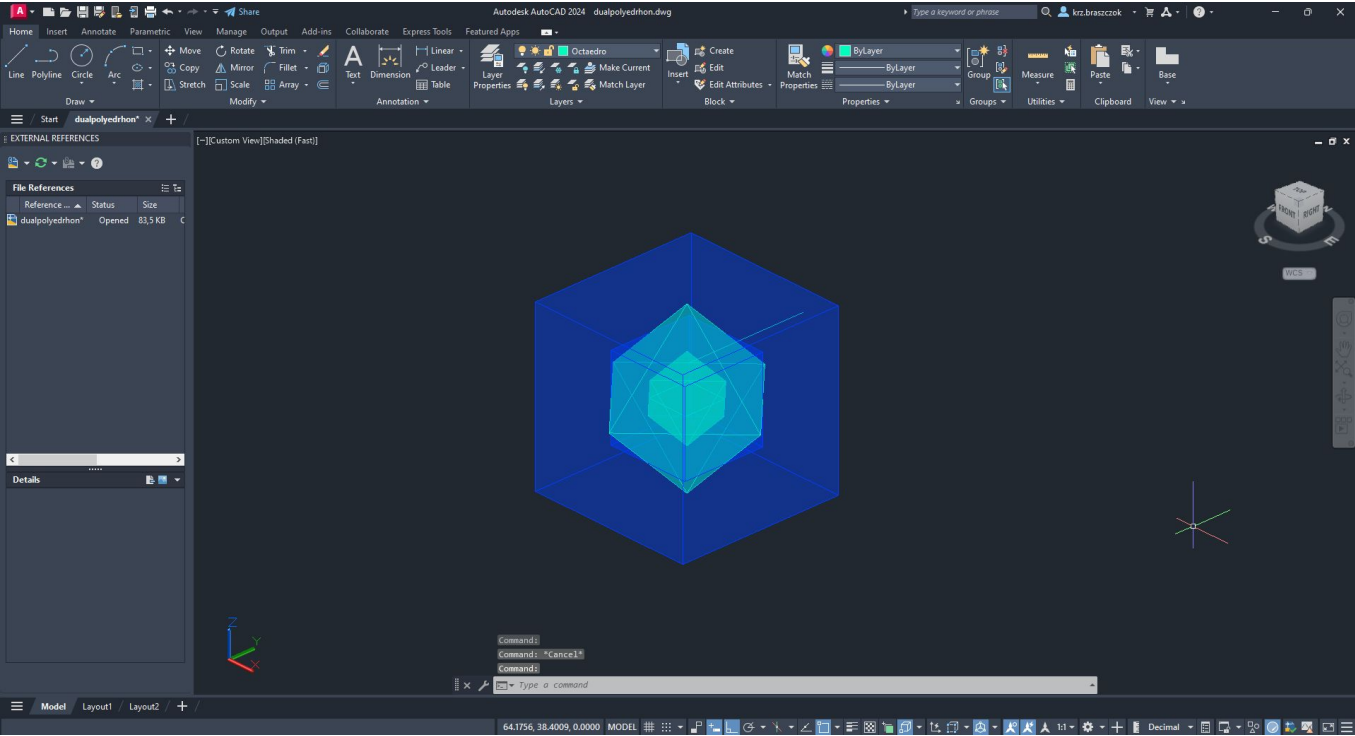
Use the 3D Array tool and 3D Mirror to create the rest



# Poliedros Duais



# Fit the resulting cube to the created octahedron



Fit the created dodecahedron to the formed icosahedron.

