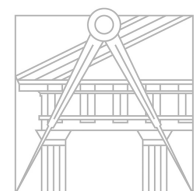


Modelação e Visualização Tridimensional em Arquitectura

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UNIVERSIDADE DE LISBOA

Mestrado Integrado em Arquitectura
Ano Lectivo 2022-2023 2º Semestre
Docente - Nuno Alão 3º Ano

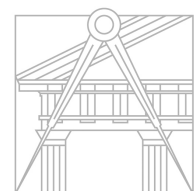
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Maria do Carmo Valadares



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MVTA

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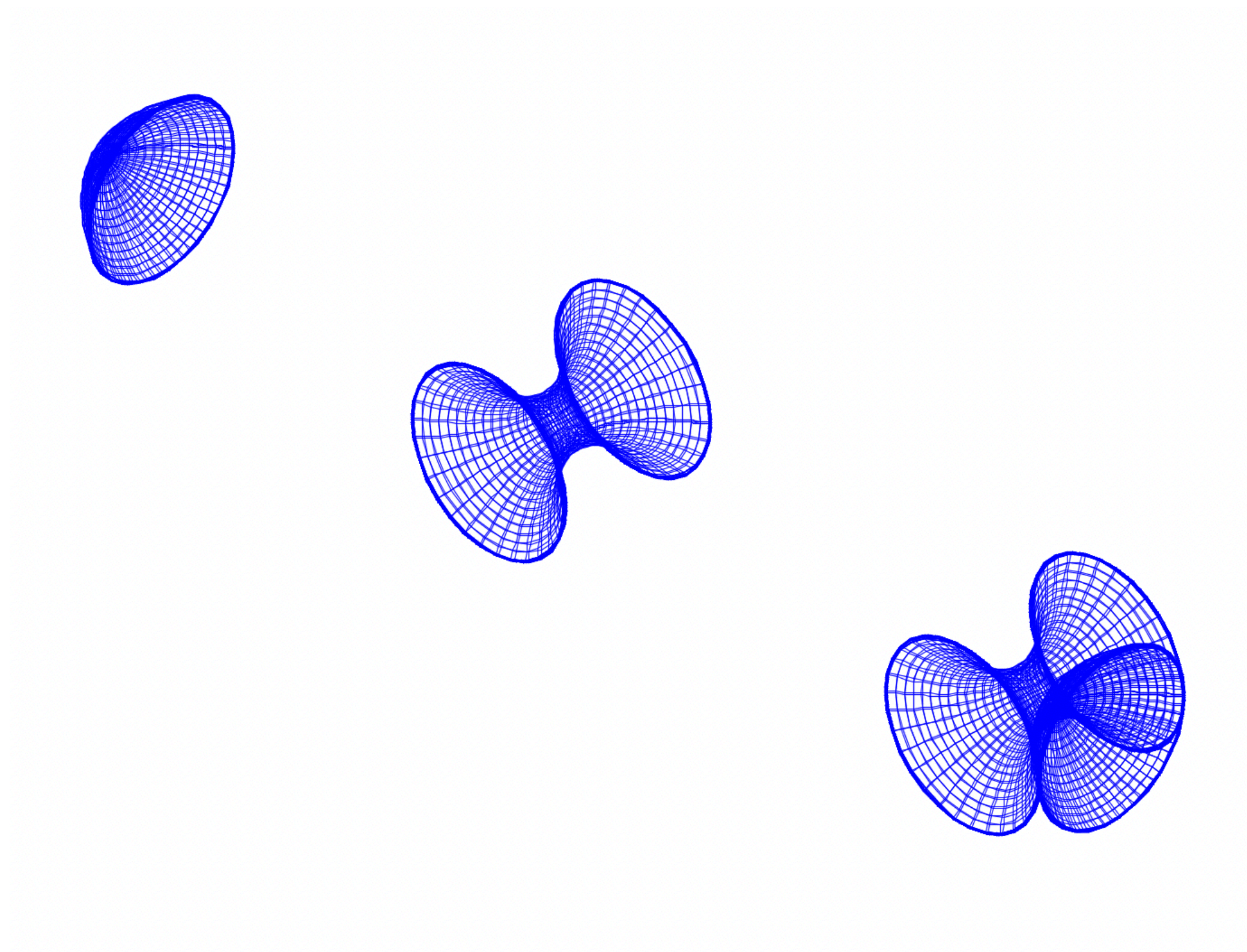
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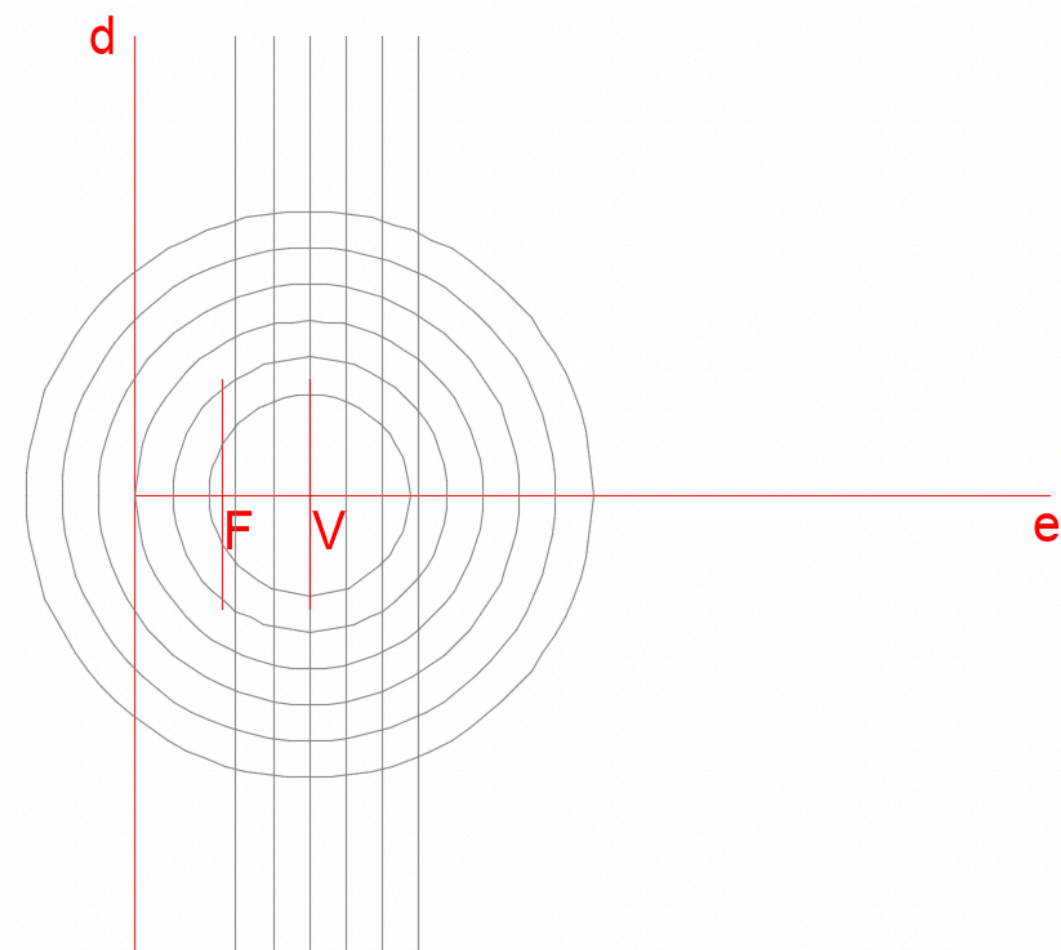
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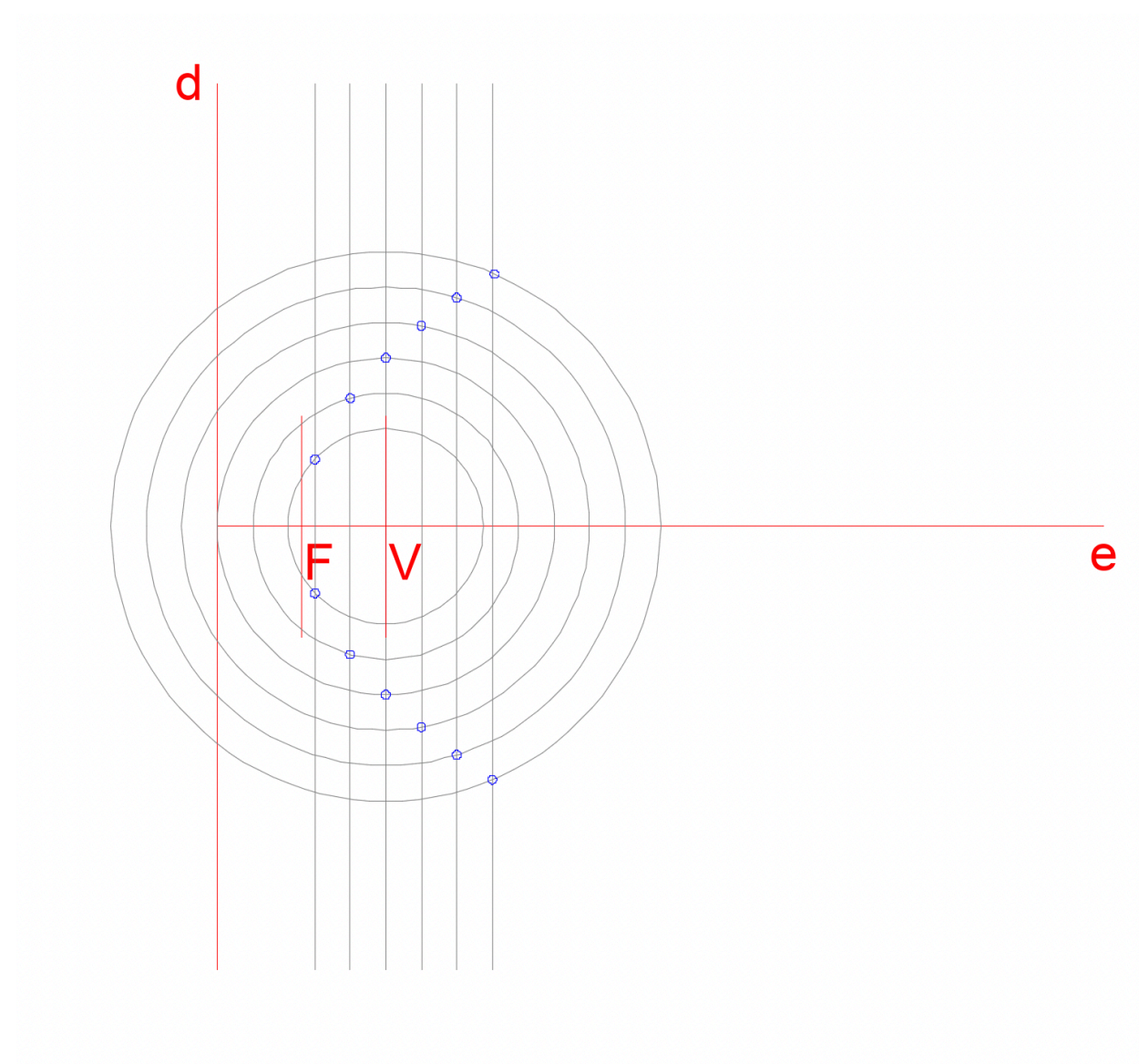
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- Dualidade hexaedro/octaedro
- Dualidade dodecaedro/icosaedro
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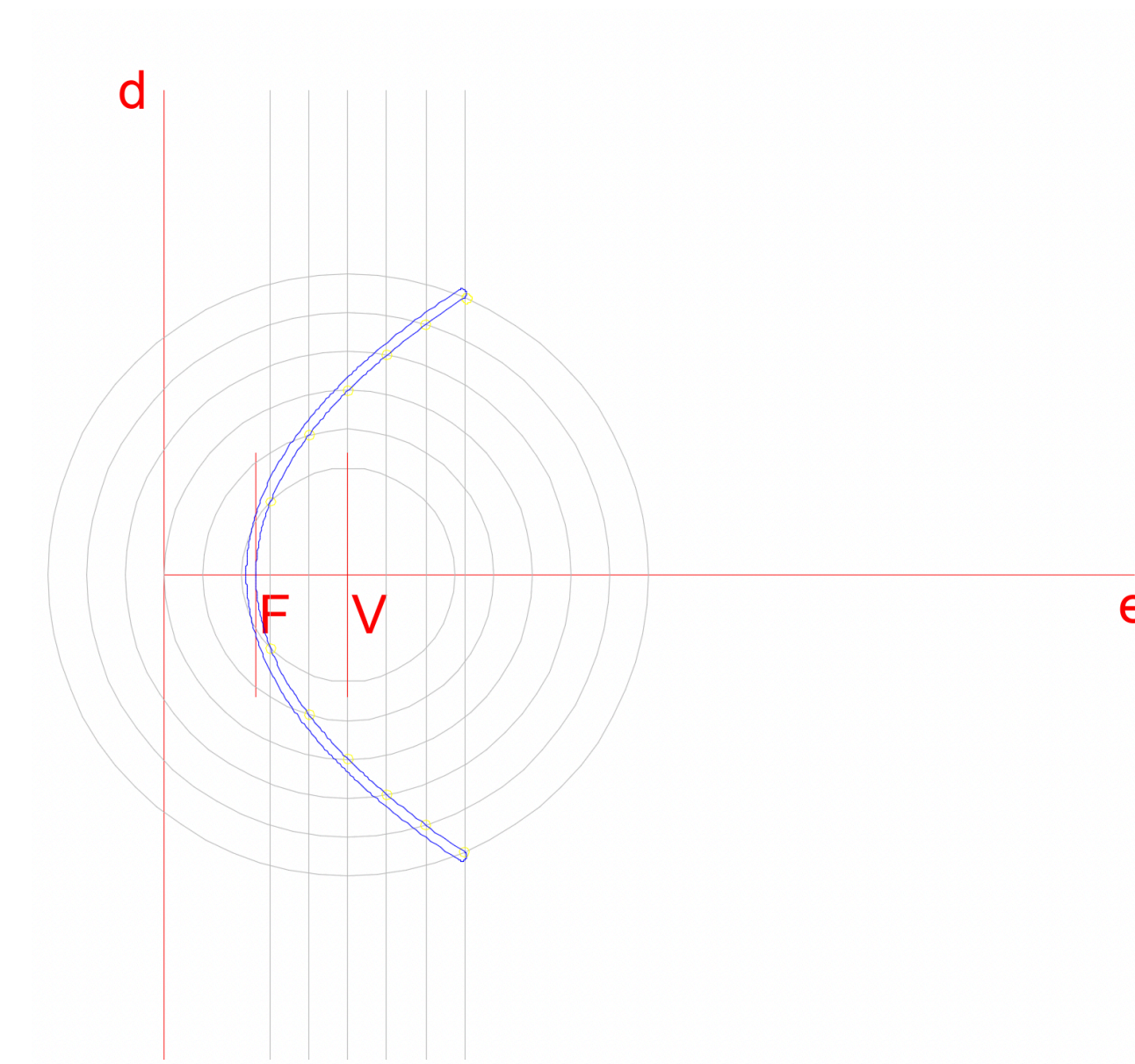
Exerc. 1 - Superfície Parabólica



-Criar linhas auxiliares e eixos

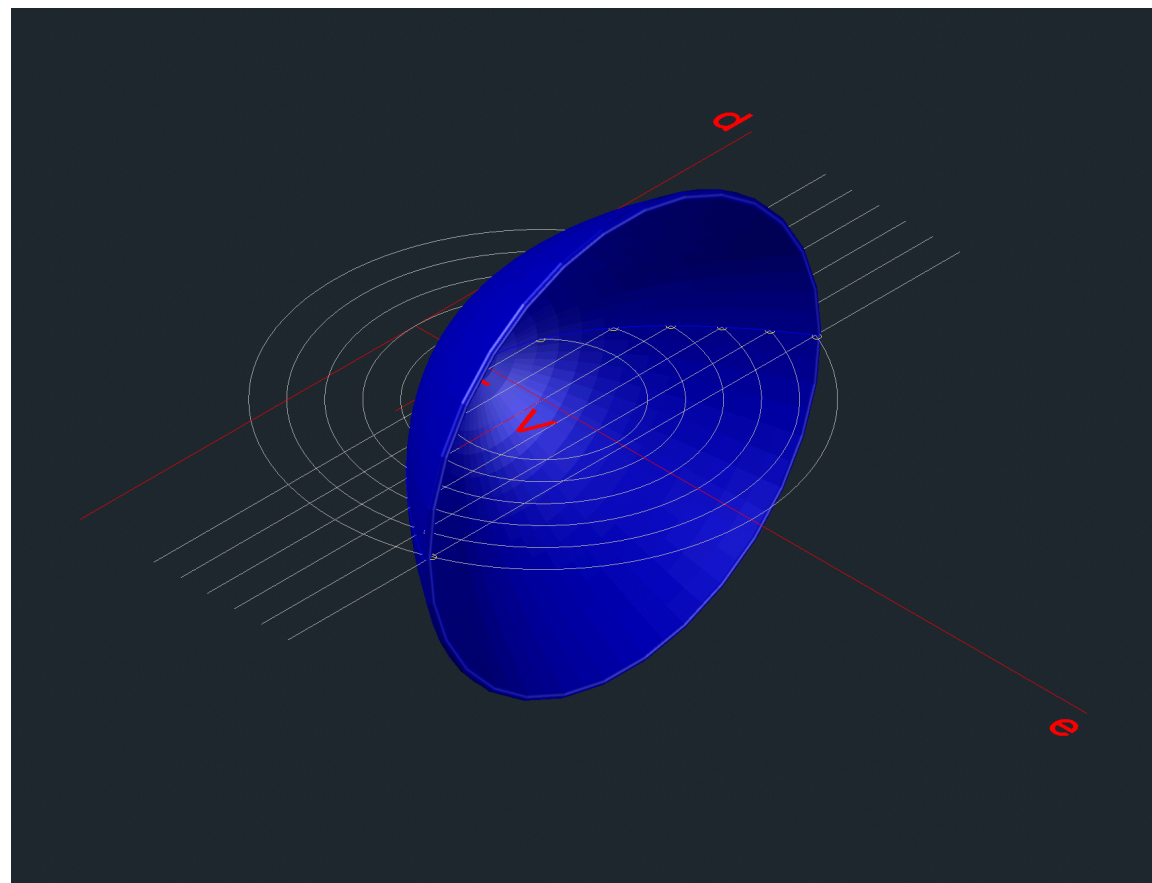


-Criar pontos de união entre as linhas auxiliares circulares e retas na sua interceção

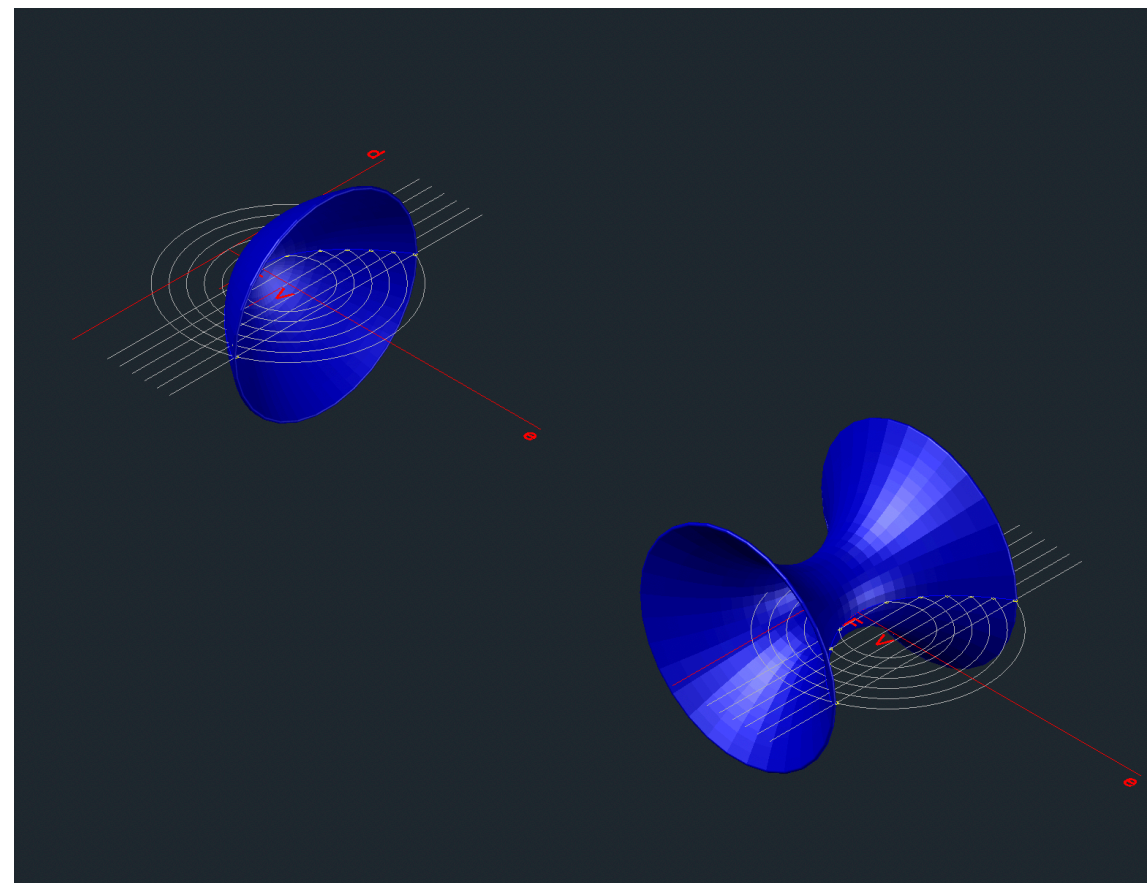


-Unir os pontos com uma spline para criar a parábola em 2d

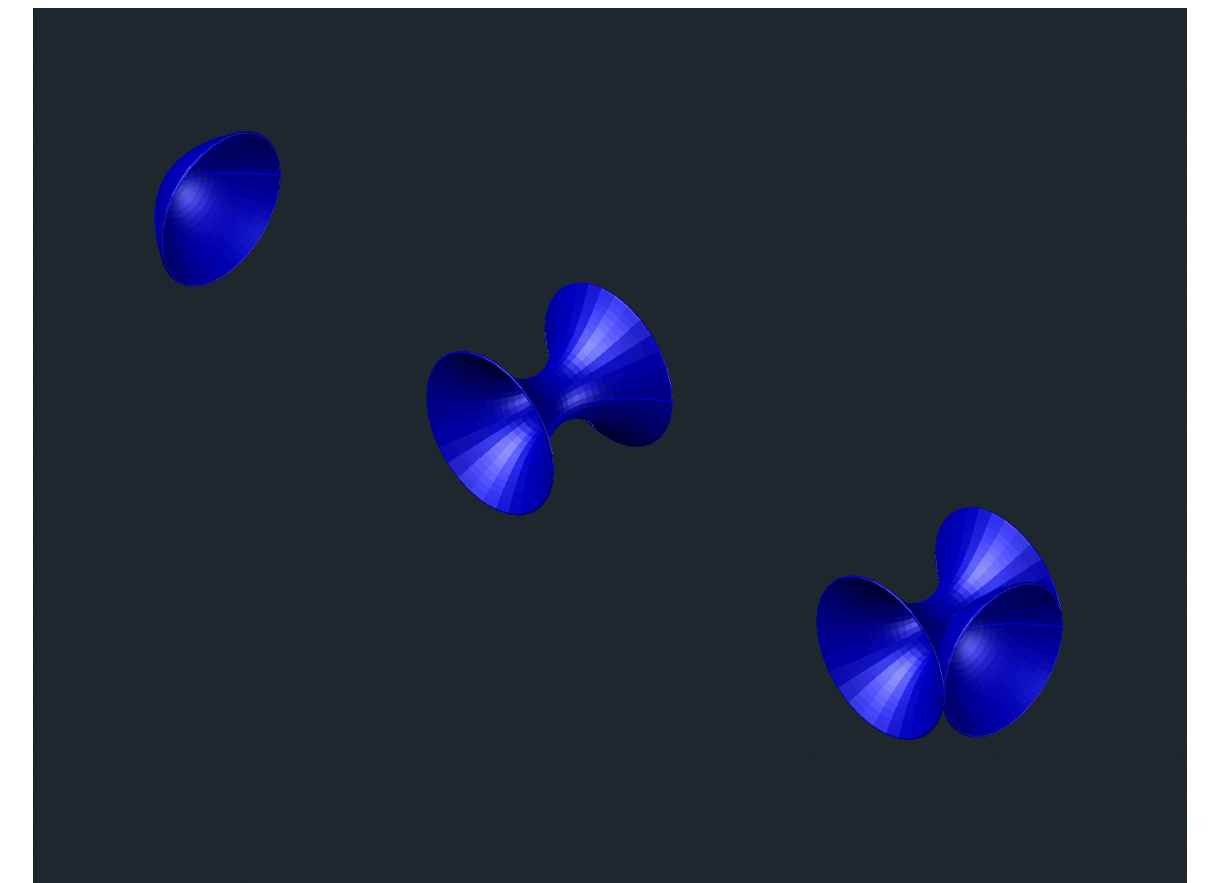
Exerc. 1.1 - Superfície Parabólica



-Criar Superfície Parabólica 1 através do comando Revsurf utilizando o eixo e

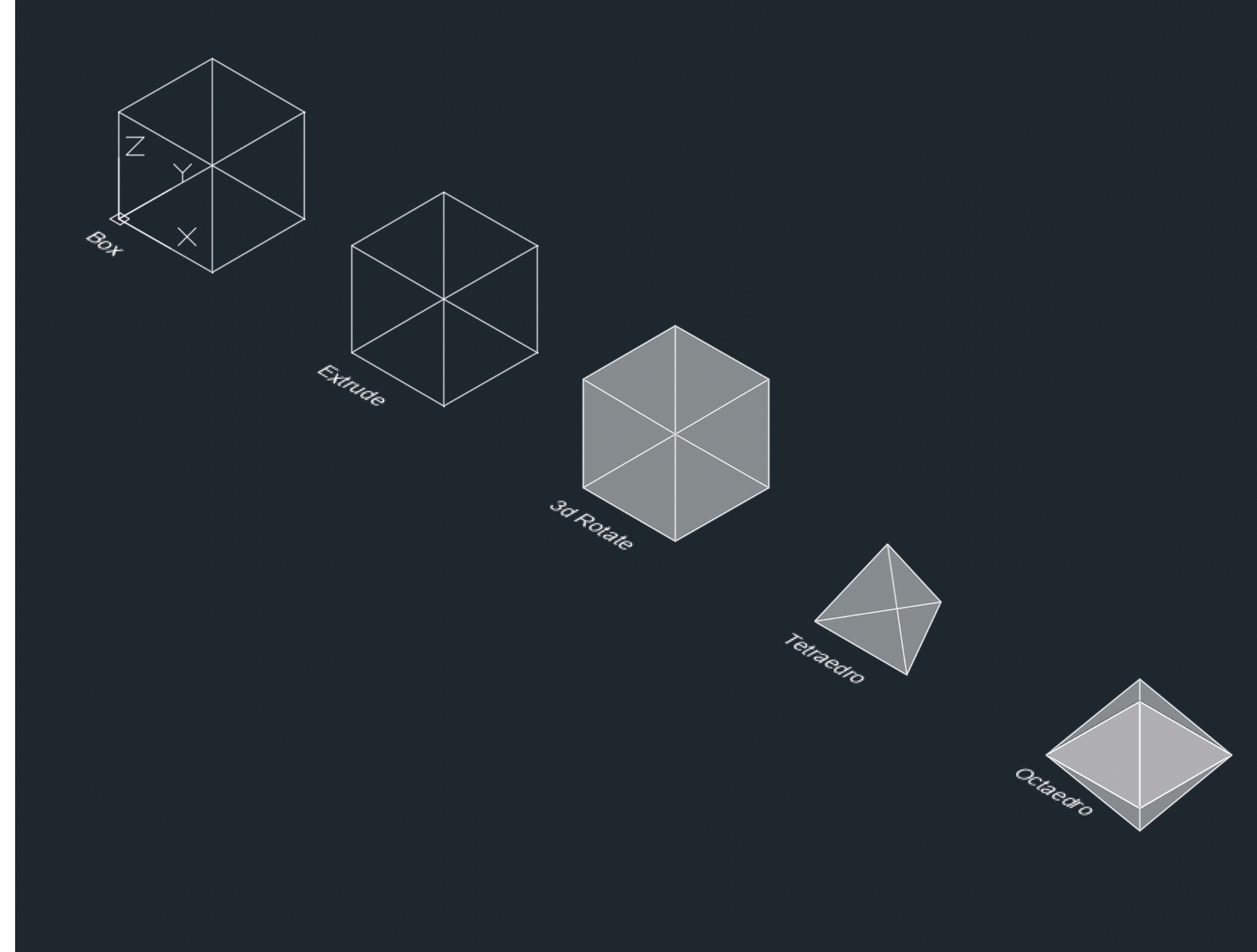


-Criar Superfície Parabólica 2 através do comando Revsurf utilizando o eixo d

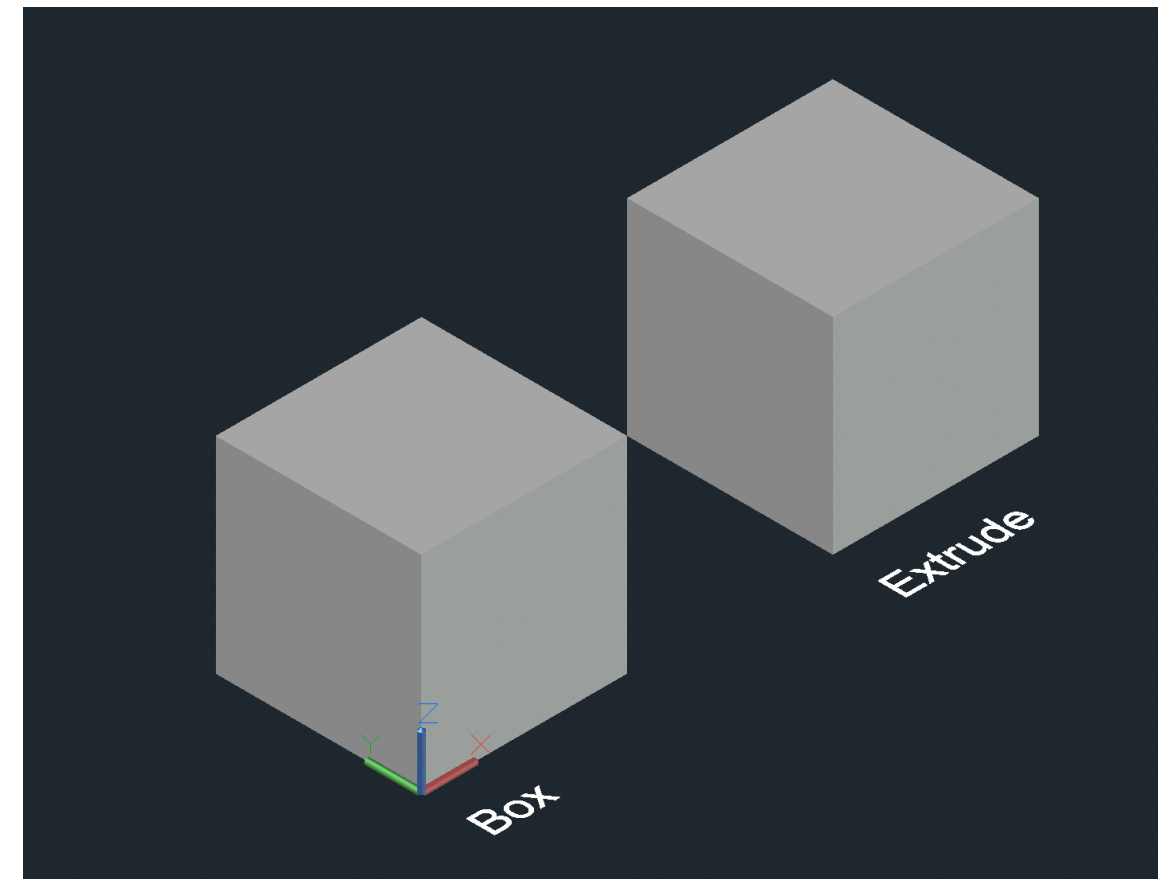


-Unir as duas Superfícies Parabólicas

Exerc. 1.2 - Superfície Parabólica



Exerc. 2. - Polígonos



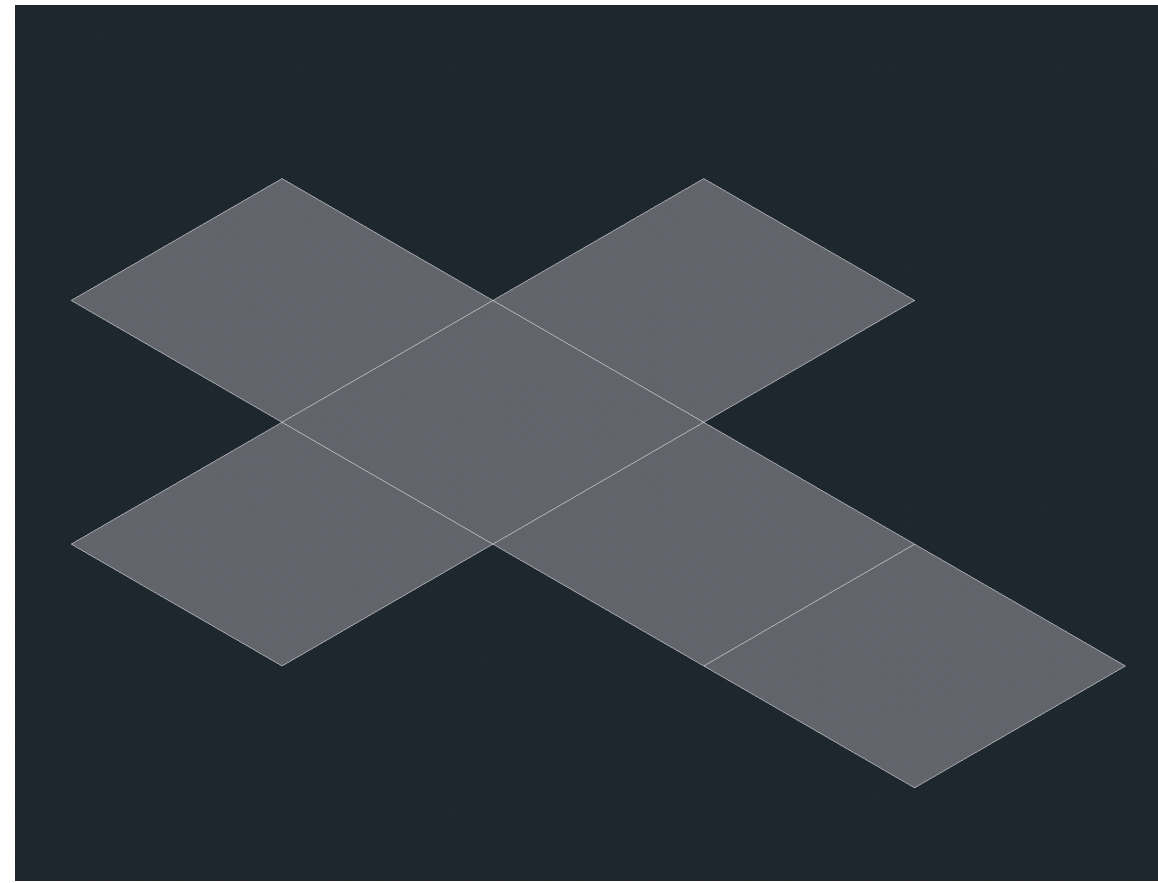
BOX

- Usar o comando BOX e introduzir as dimensões do cubo (10)

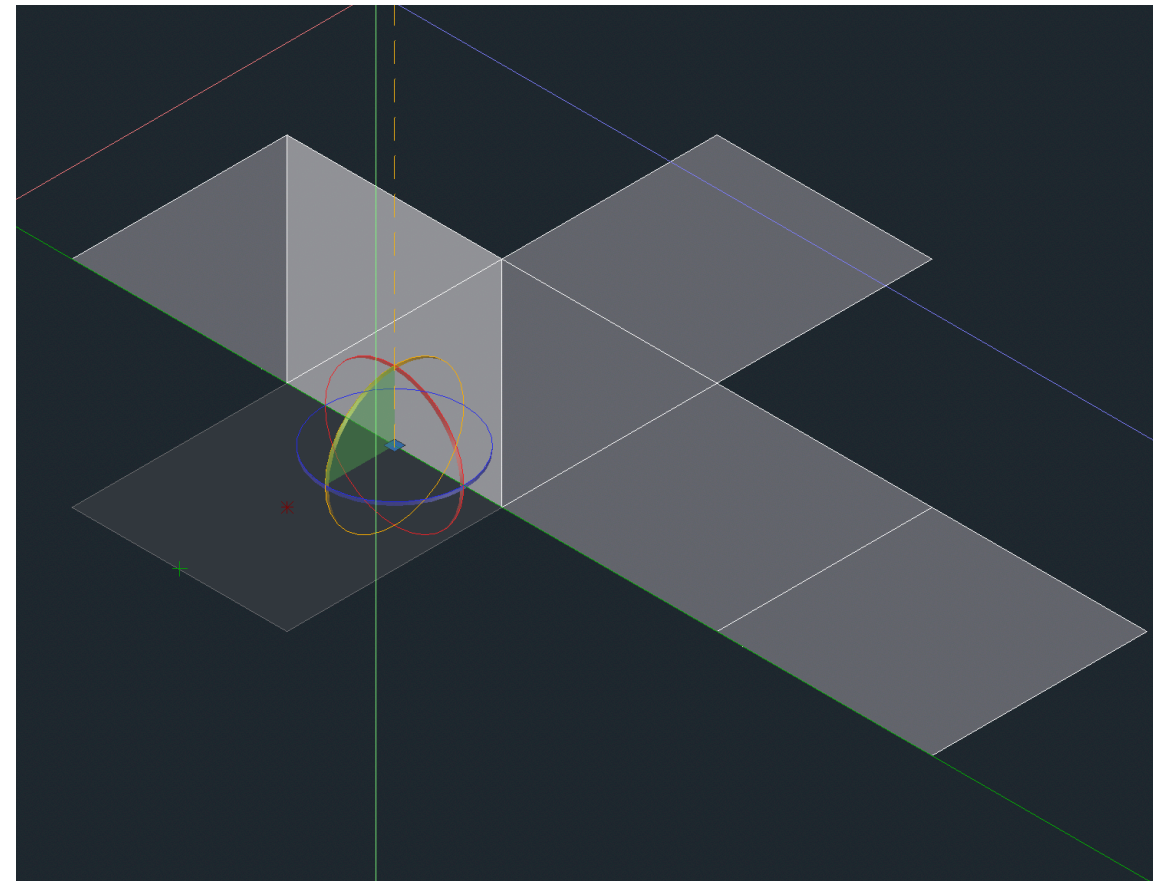
ESTRUDE

- Criar um quadrado utilizando o comando PLINE com dimensões 10x10 (10<0; 10<90; 10<180)
- Usar o comando EXTRUDE e introduzir o valor de 10 para criar o cubo

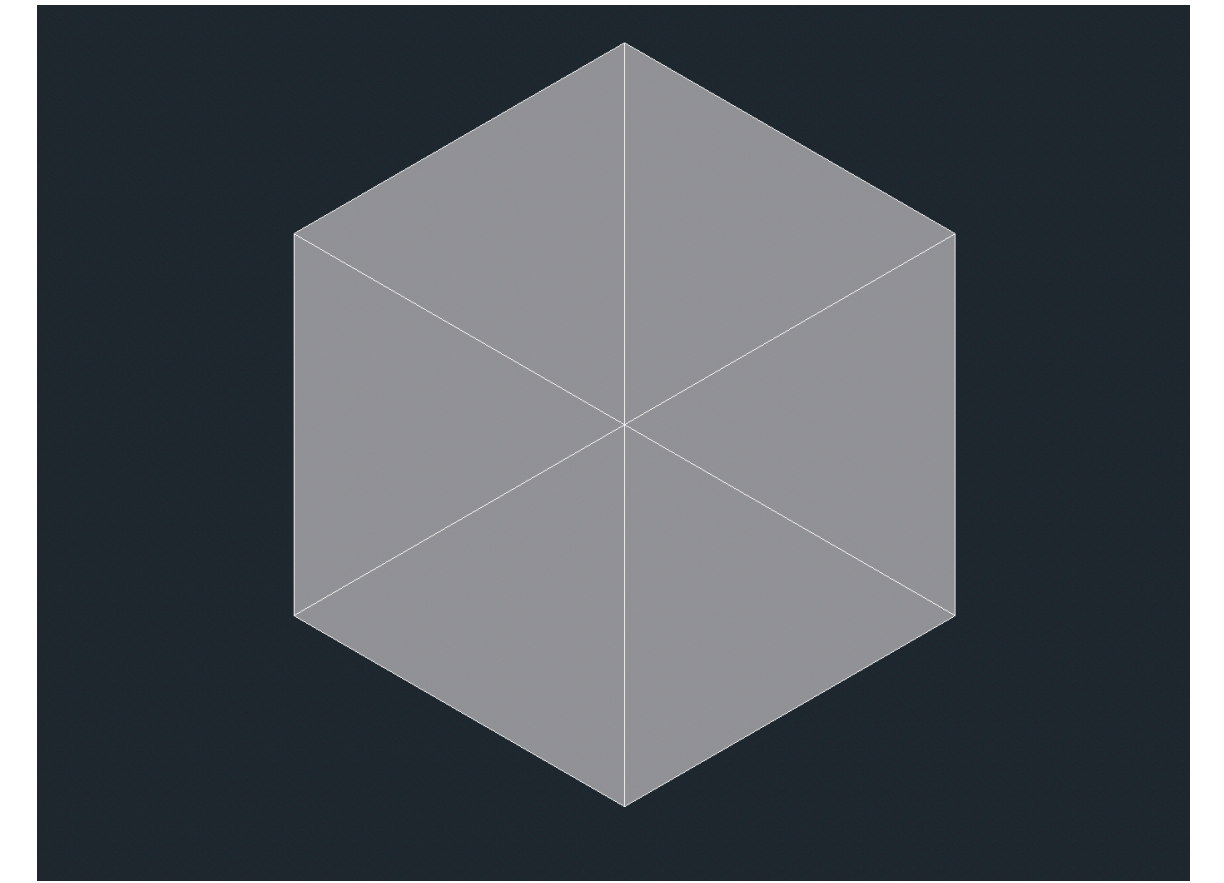
Exerc. 2.1 - Cubo (box e extrude)



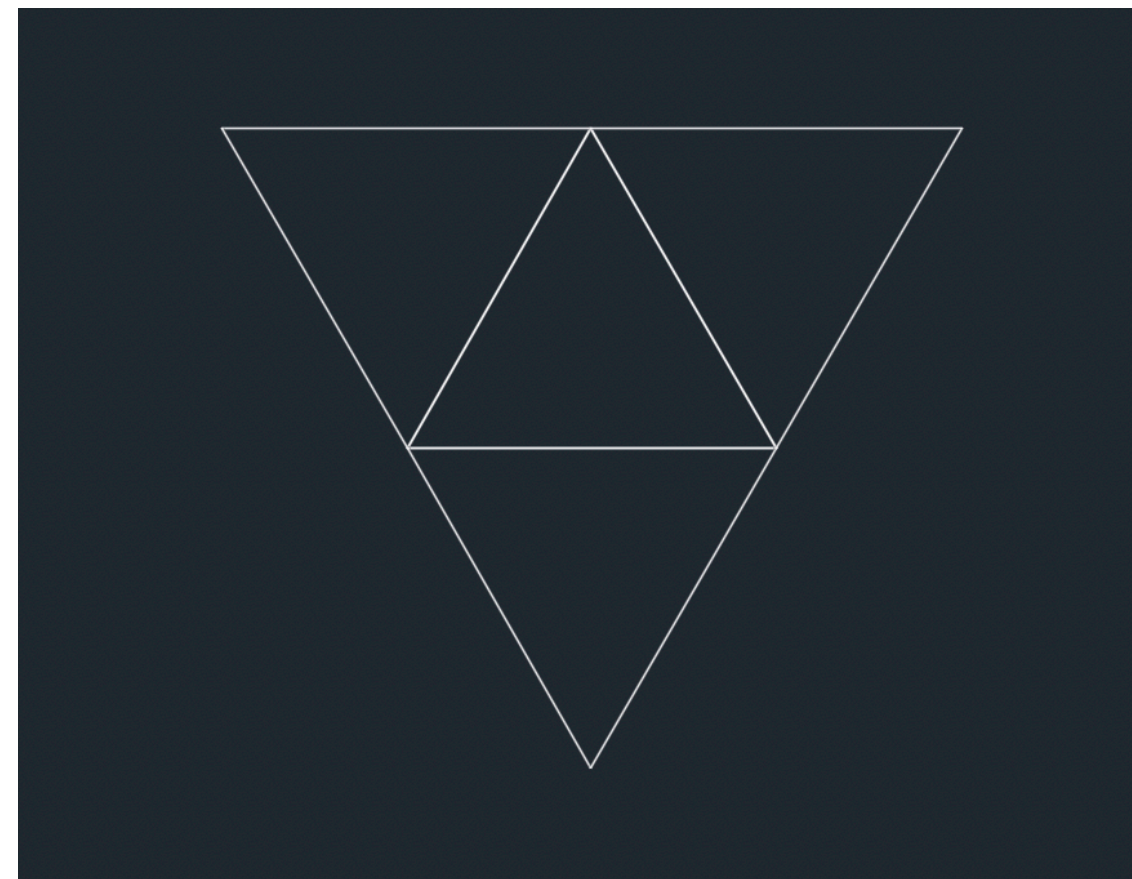
- Criar a base de um cubo em 2d
- Utilizar o comando HATCH para preencher as faces



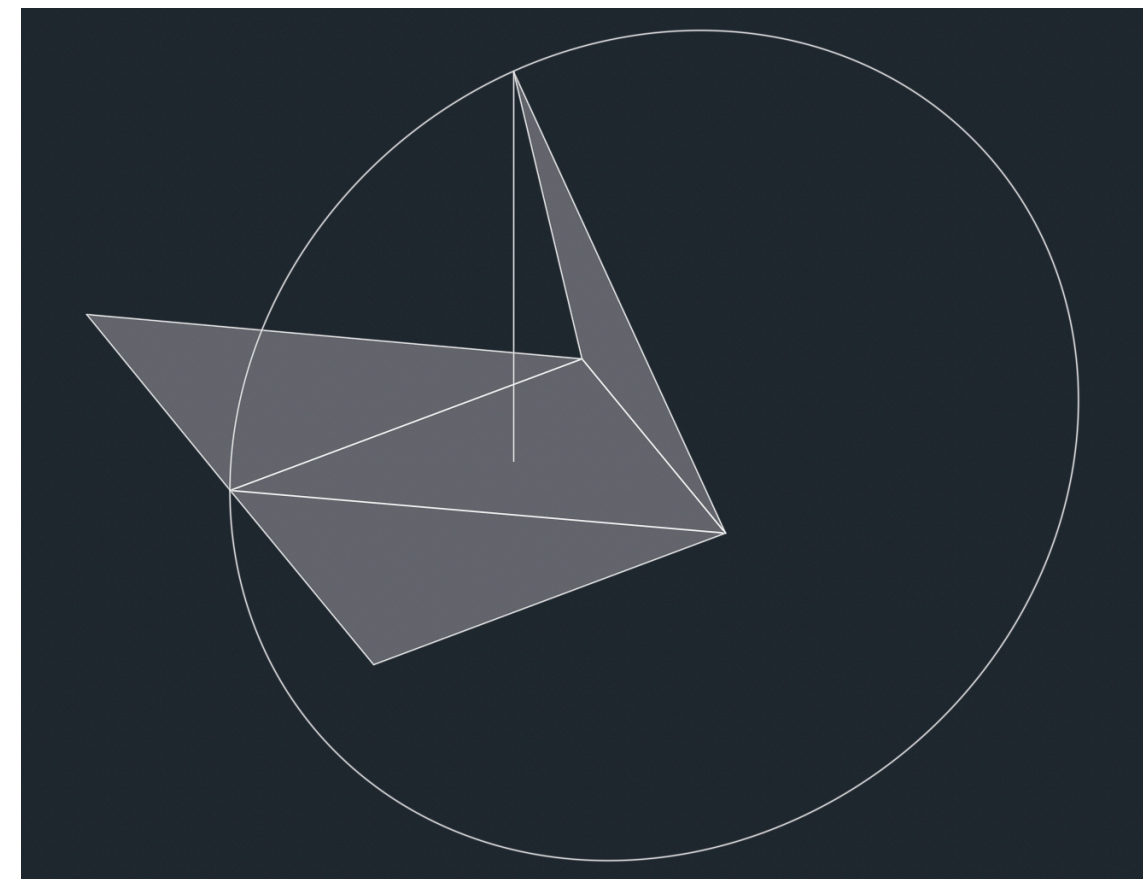
- Utilizar o comando 3D ROTATE individualmente para cada face do cubo. Após selecionar o quadrado, escolher o devido eixo de rotação e rodar o quadrado de modo a criar um elemento tridimensional



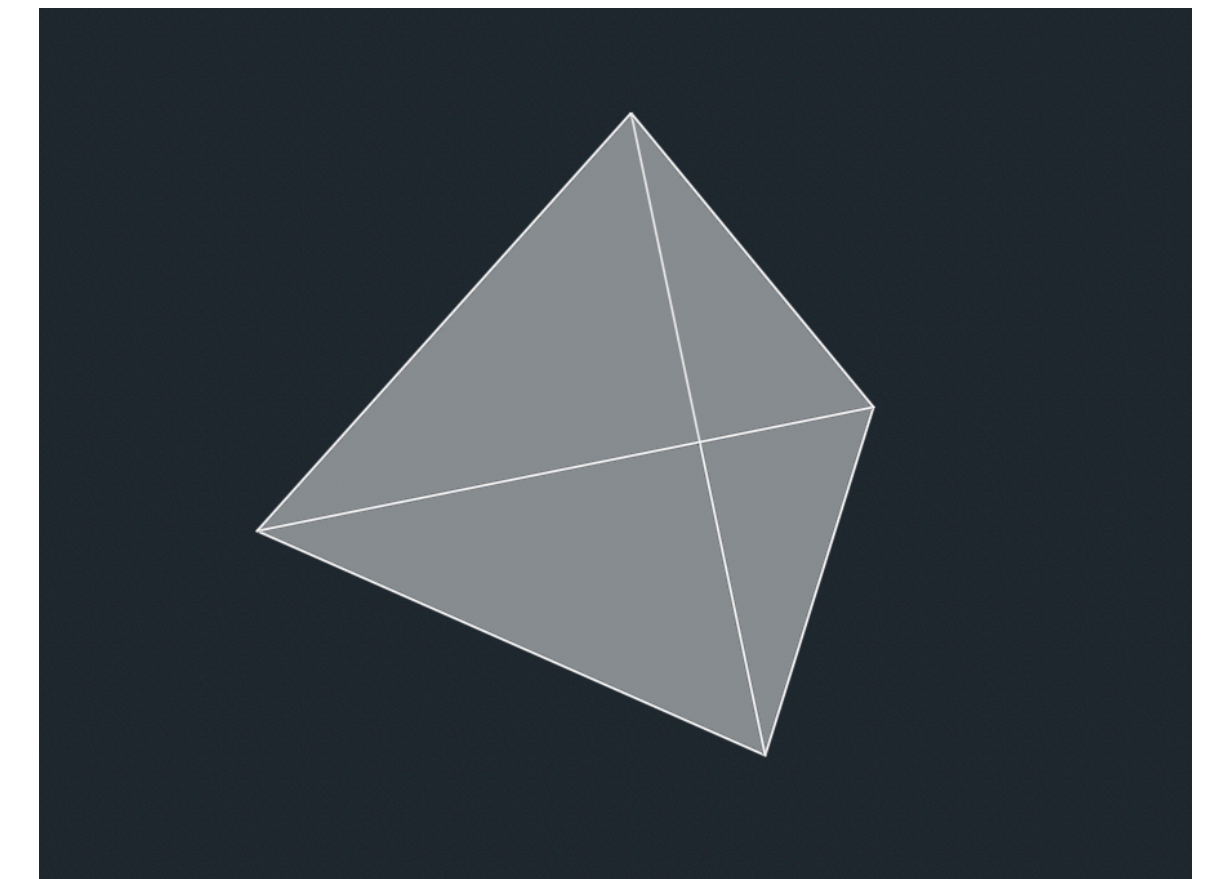
Exerc. 2.2 - Cubo (3d Rotate)



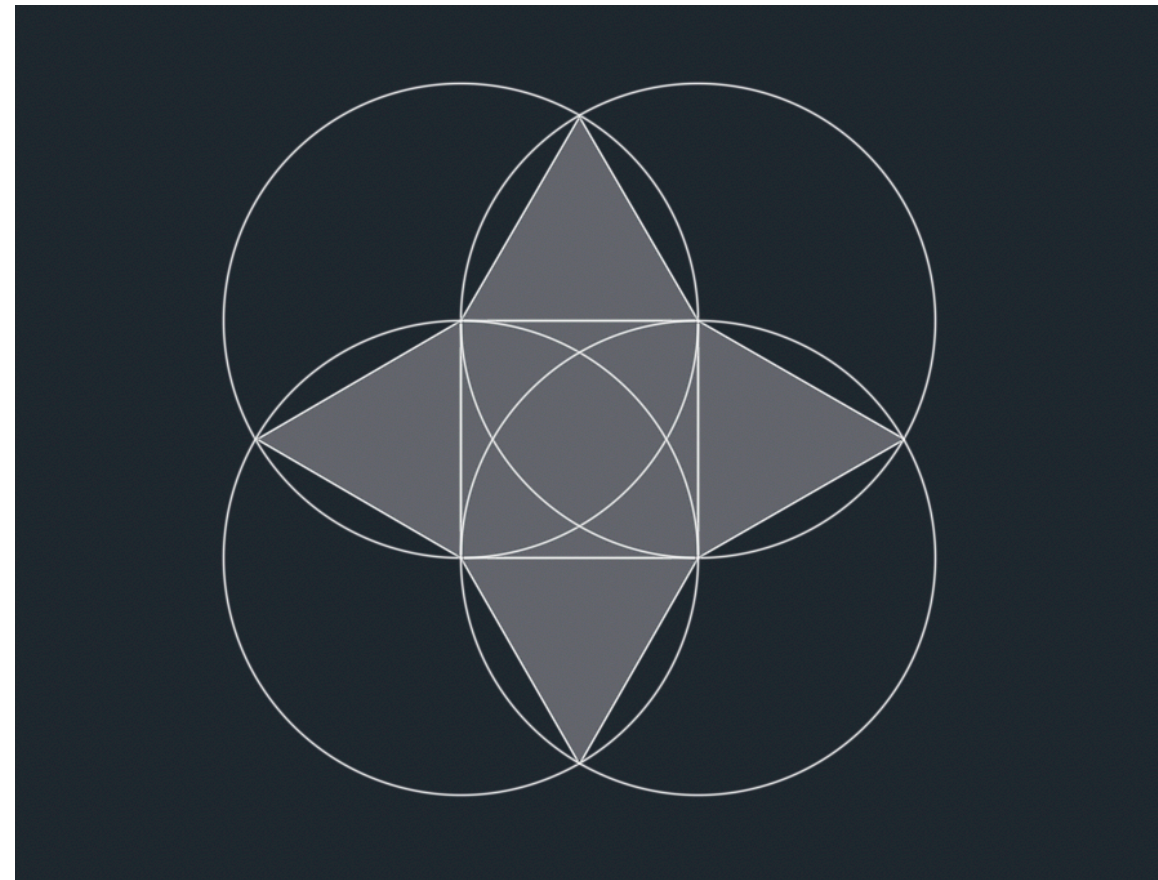
- Criar a base de um tetraedro em 2d
- Utilizar o comando HATCH para preencher as faces



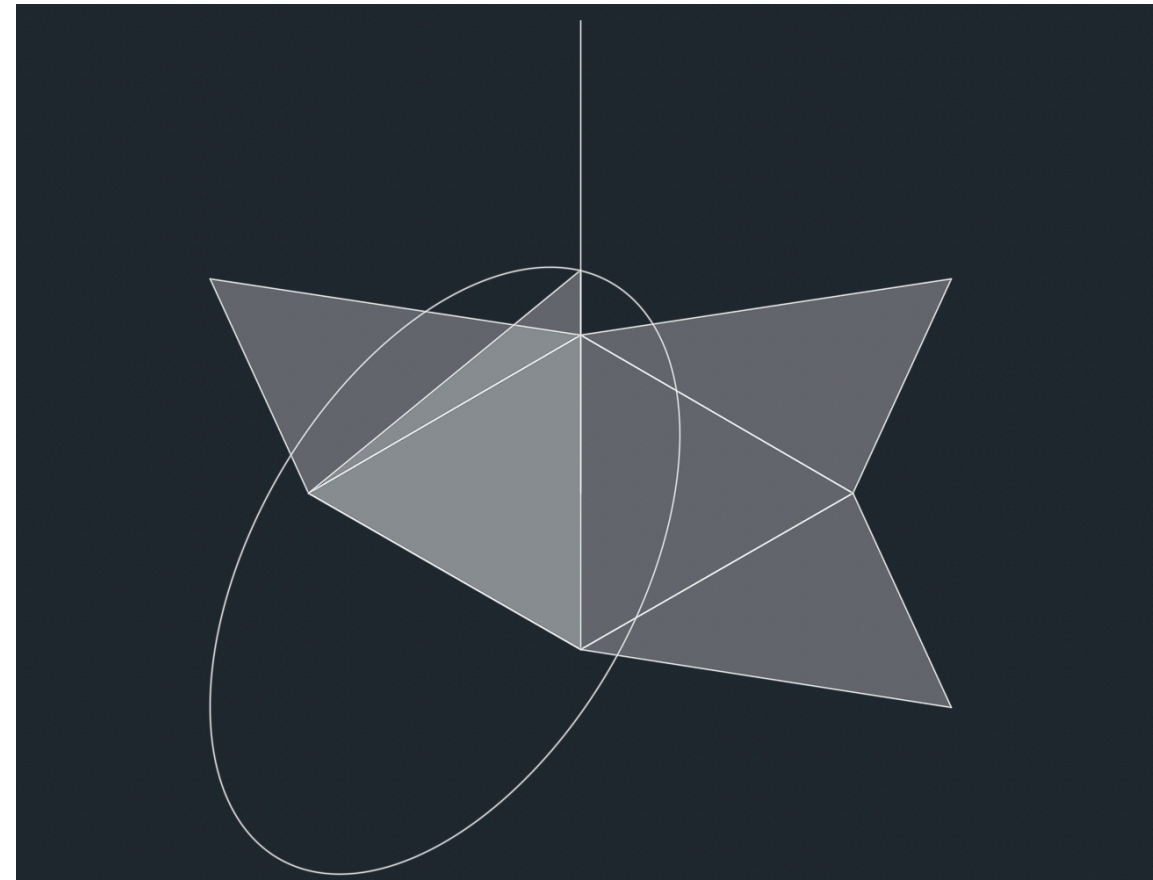
- Utilizar o comando 3D ROTATE individualmente para cada face do tetraedro.



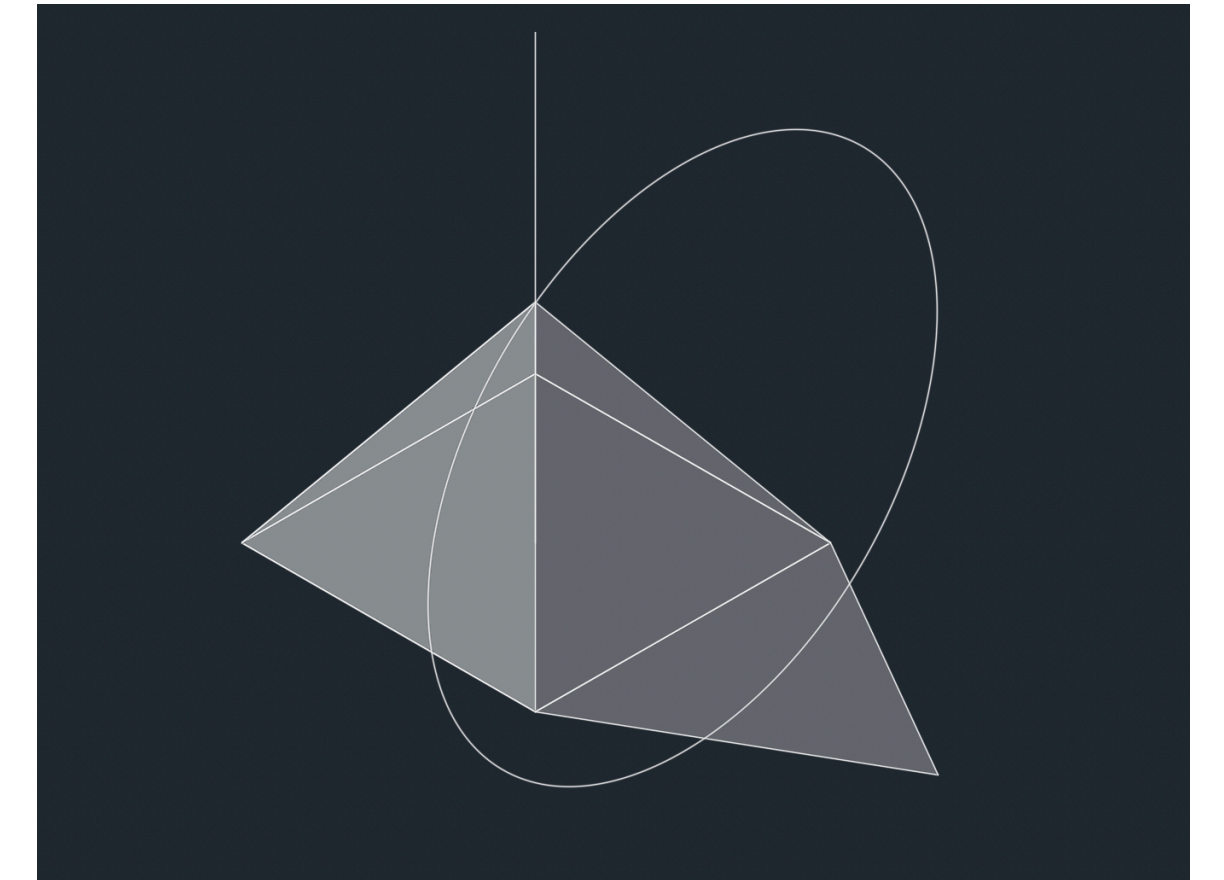
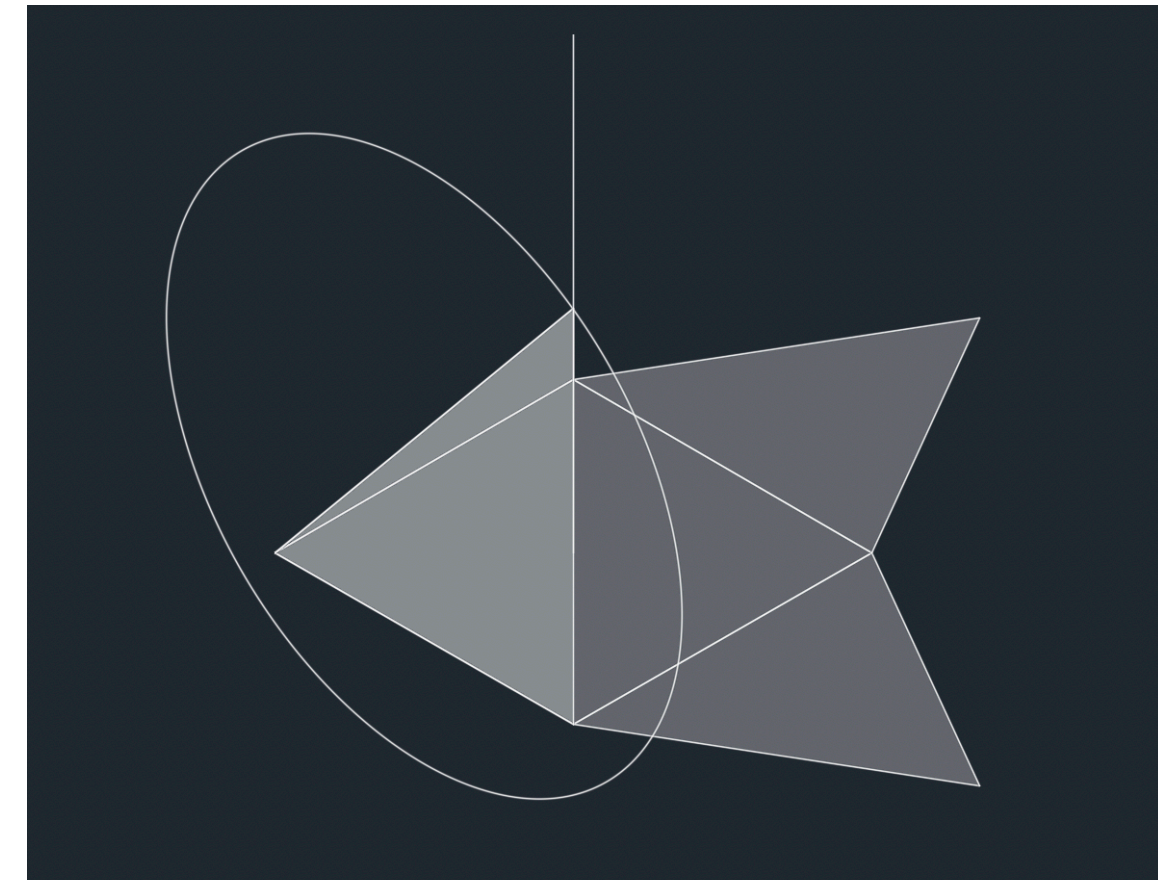
Exerc. 2.3 - Pirâmide Triangular



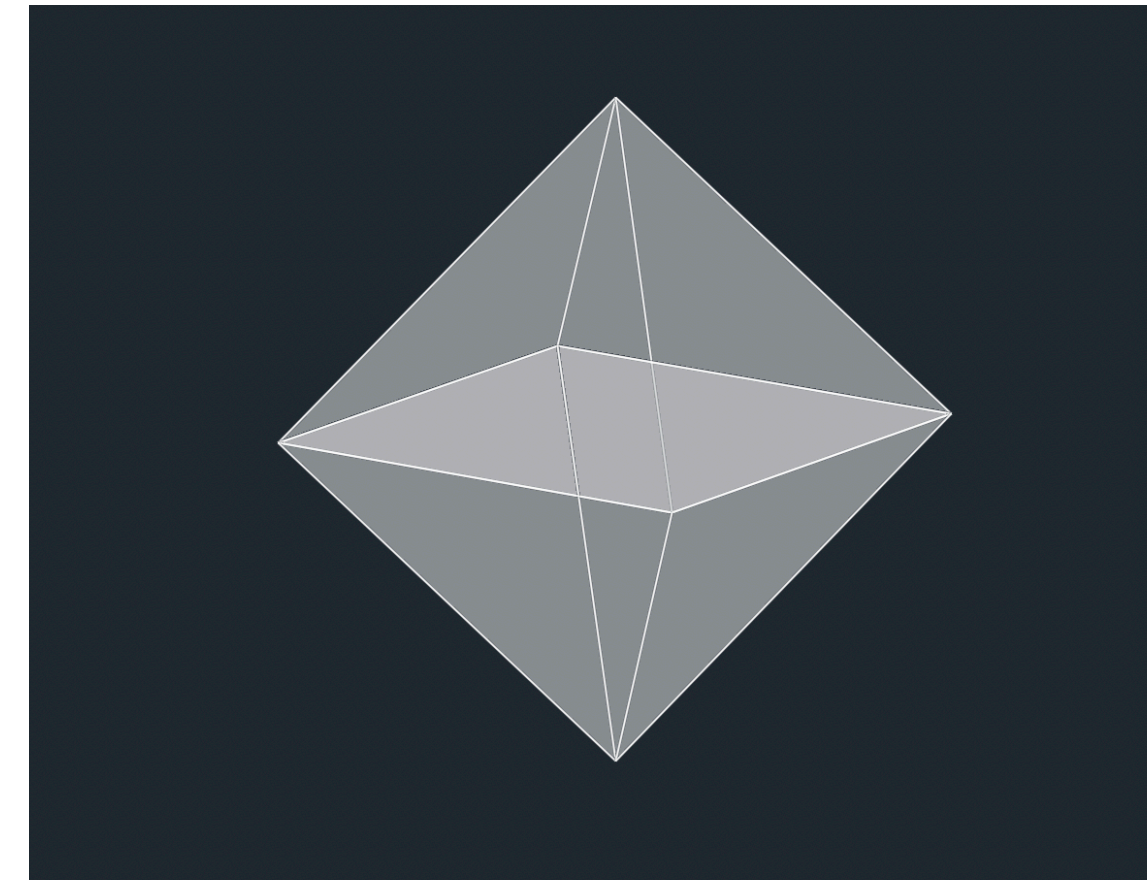
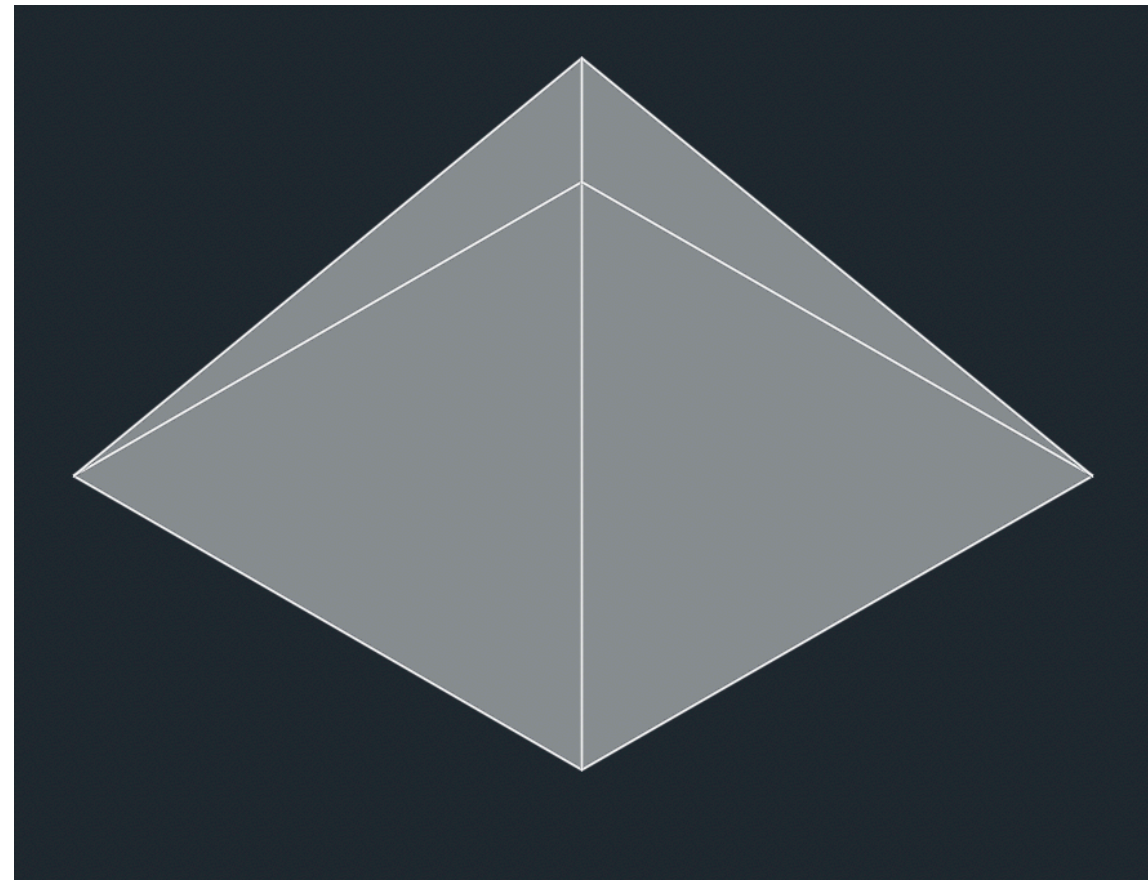
- Criar a base do octaedro em 2d
- Utilizar o comando HATCH para preencher as faces



- Utilizar o comando 3D ROTATE individualmente para cada face. Após selecionar o triângulo, escolher o devido eixo de rotação e rodar o elemento de modo a criar um elemento tridimensional

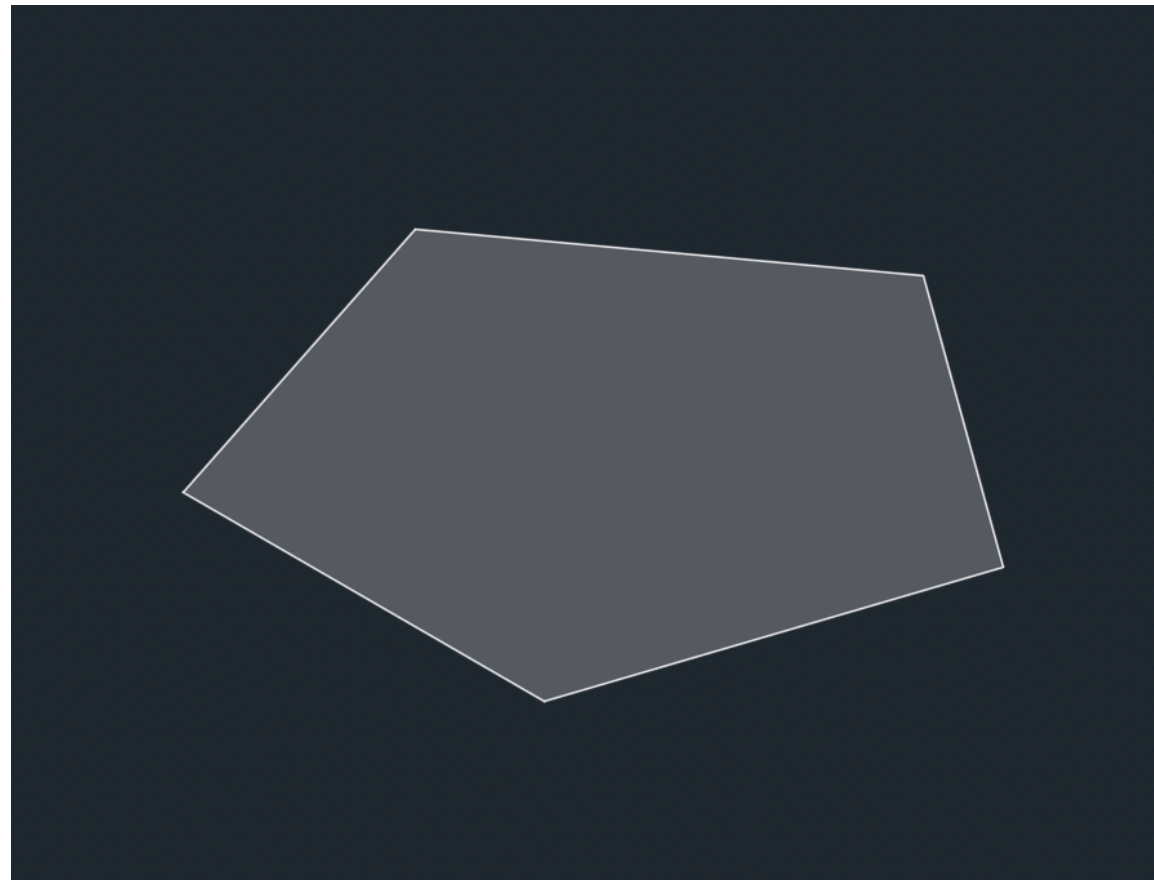


Exerc. 2.4 - Octaedro

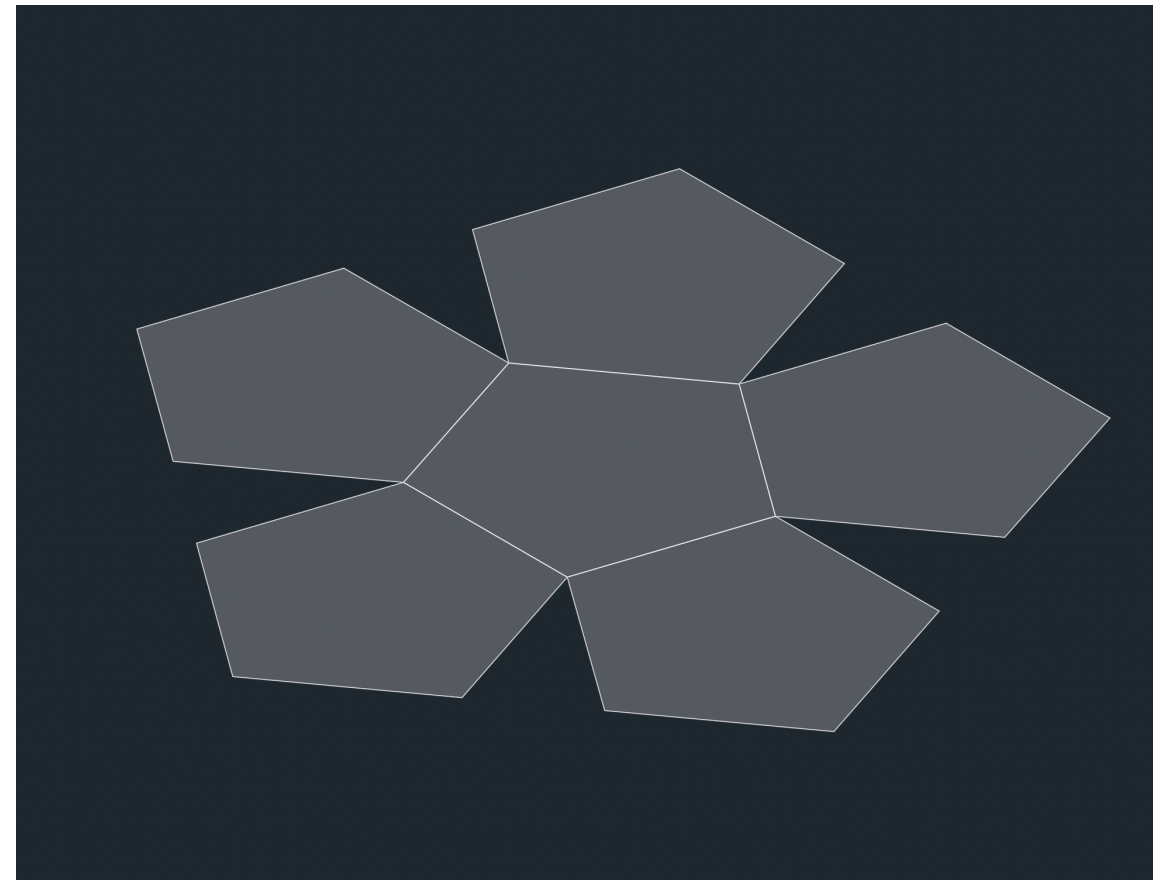


-Utilizar o comando 3D MIRROR para obter o resultado pretendido do octaedro

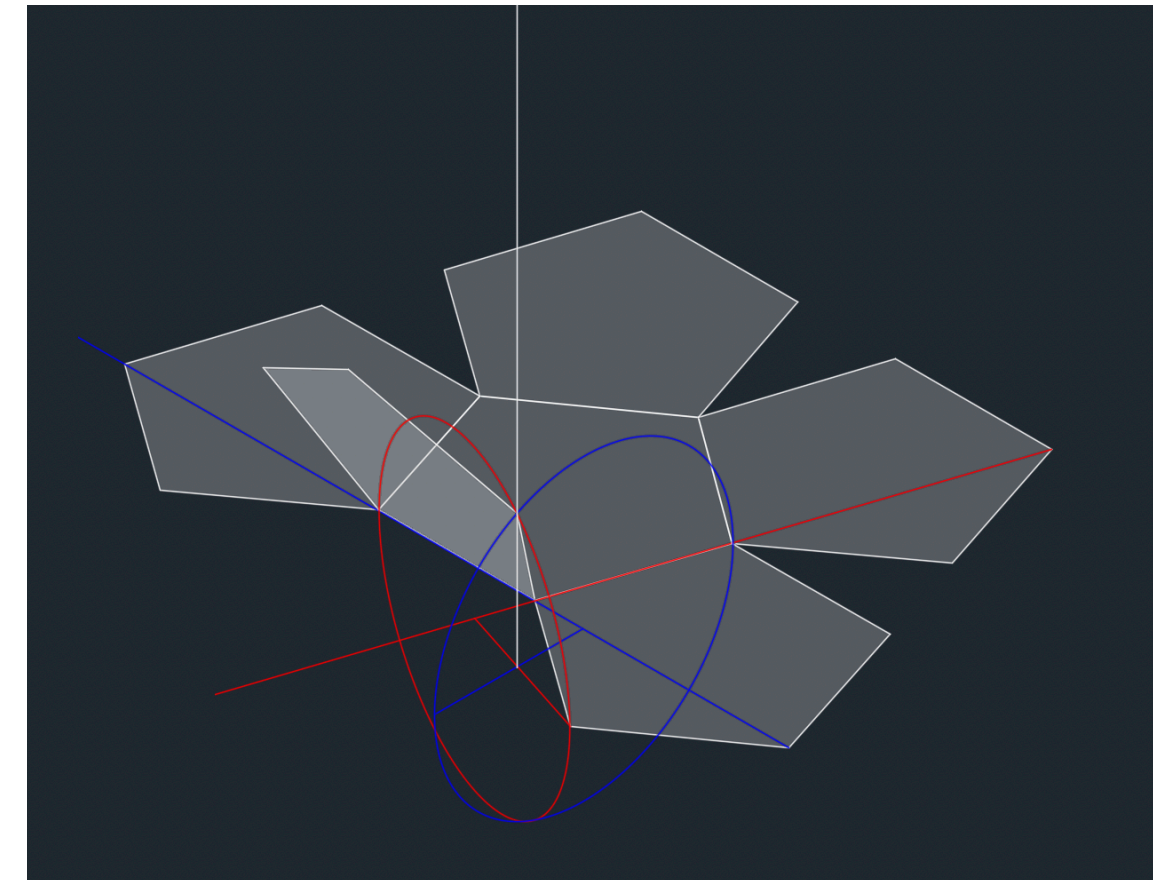
Exerc. 2.4 - Octaedro



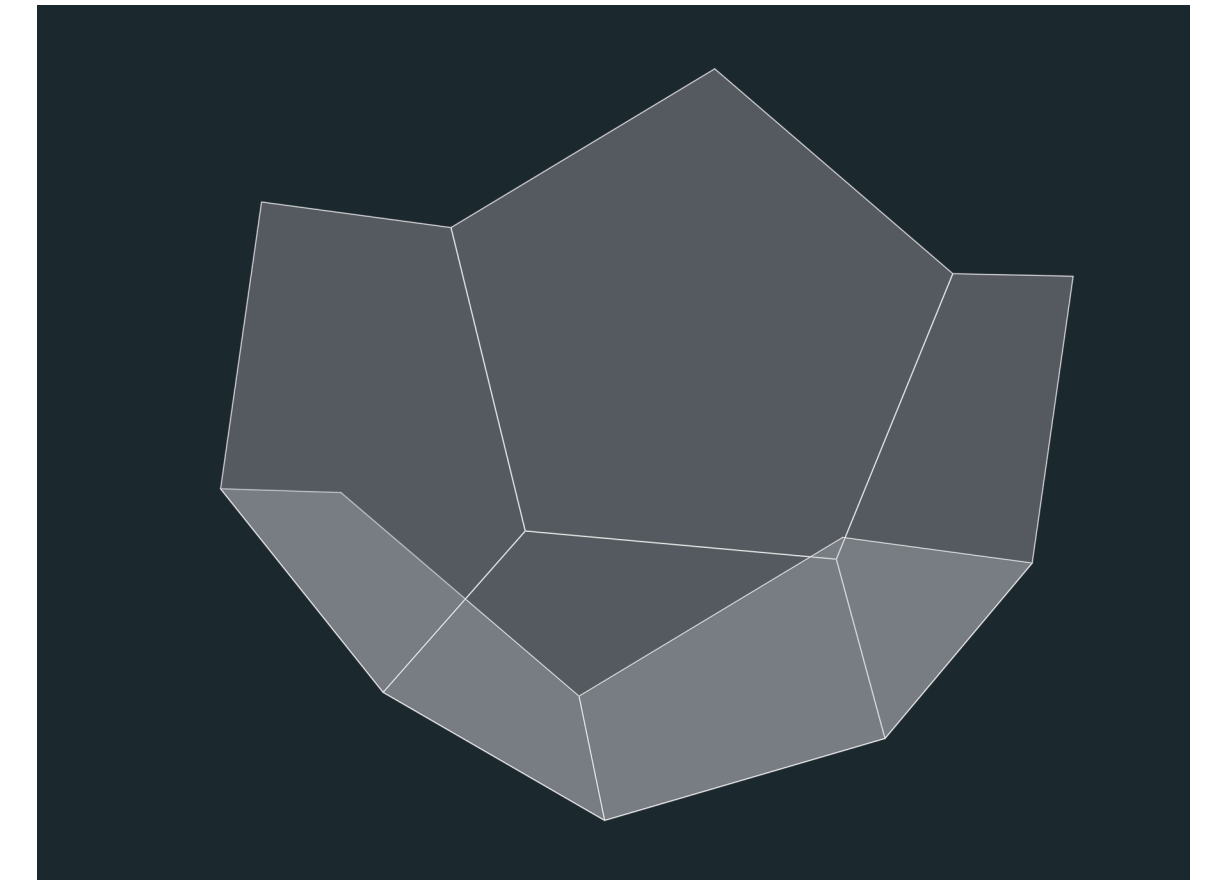
- Criar a base do dodecaedro em 2d
- Utilizar o comando HATCH para preencher a face



- Copiar a base e colar, unindo a figura com todas as arestas da base

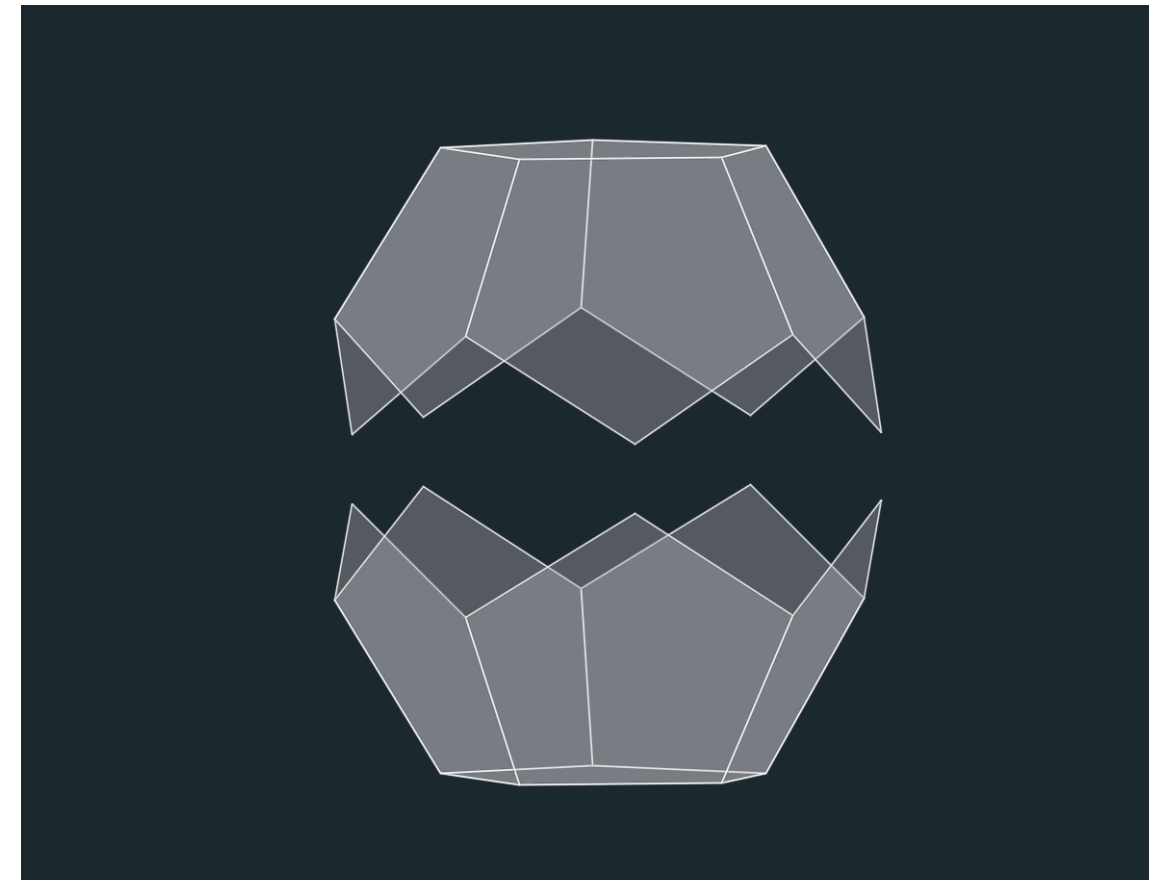
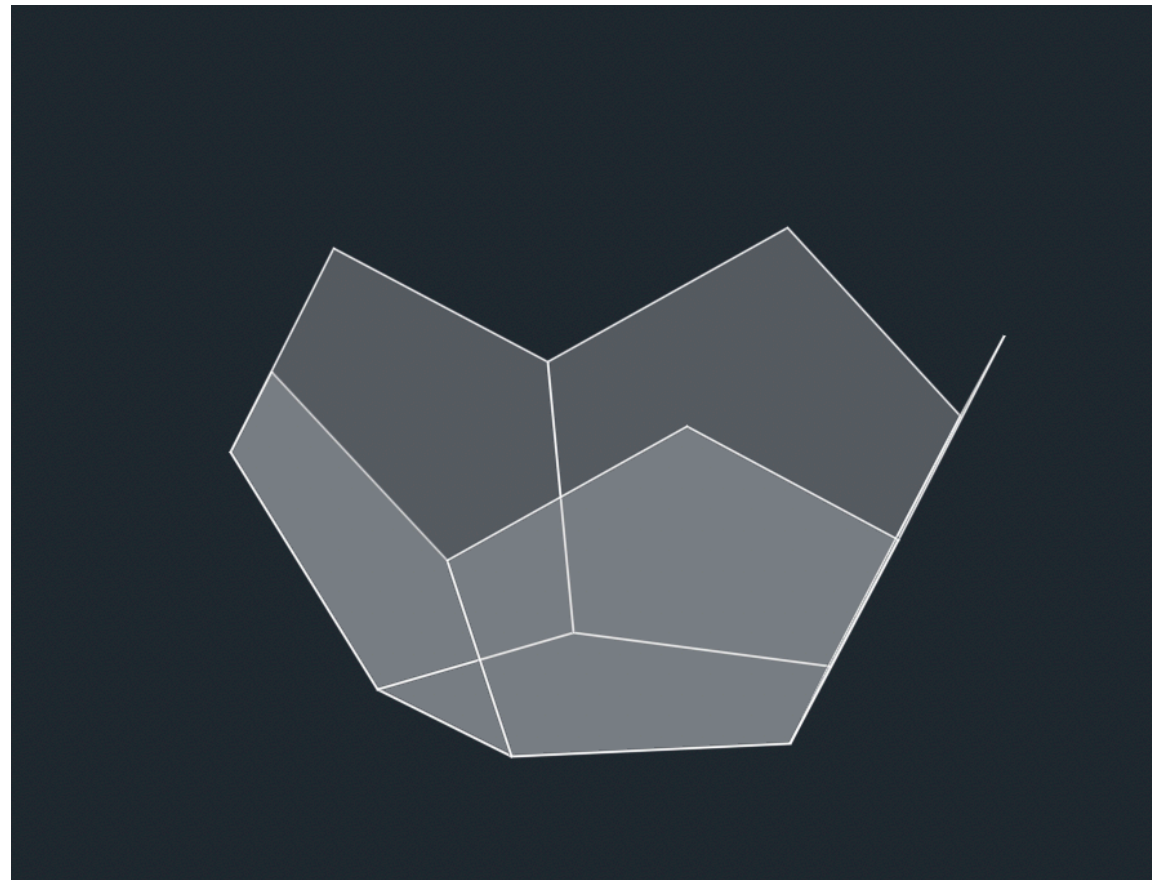


- Utilizar o 3d ROTATE para coincidir com os elementos auxiliares previamente criados

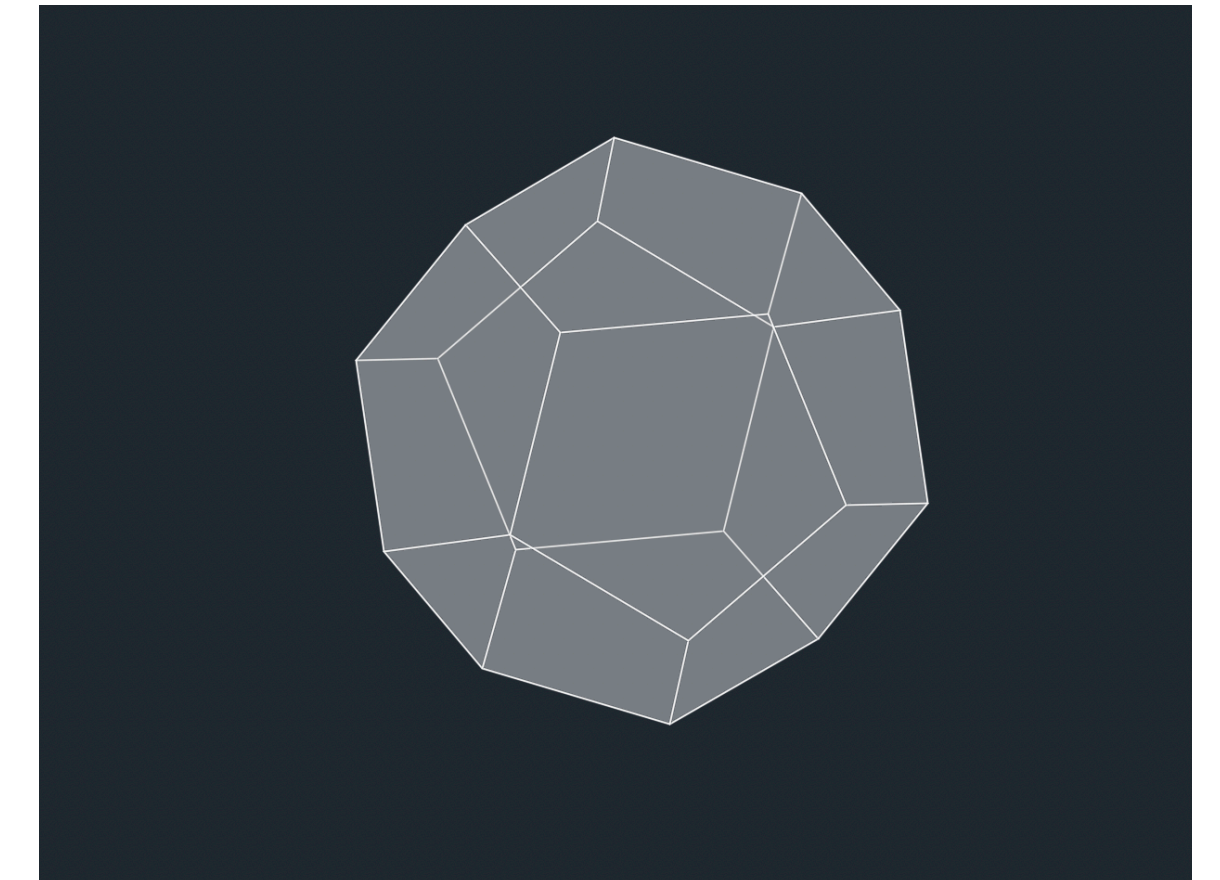


- Através do comando ARRAYPOLAR, criar uma cópia multiplicando o hexágono em torno da base

Exerc. 3 - Dodecaedro

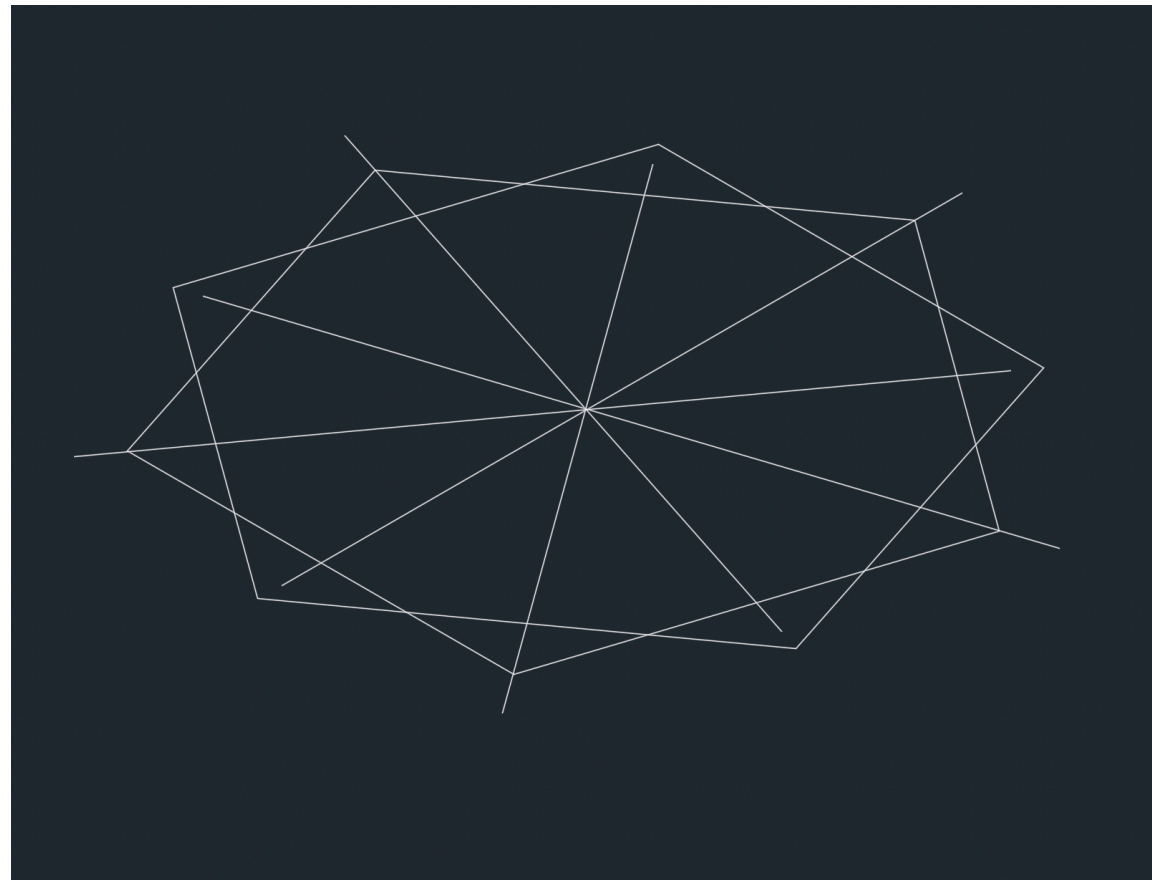


- Utilizar o comando 3DMIRROR para replicar o mesmo objeto mais uma vez

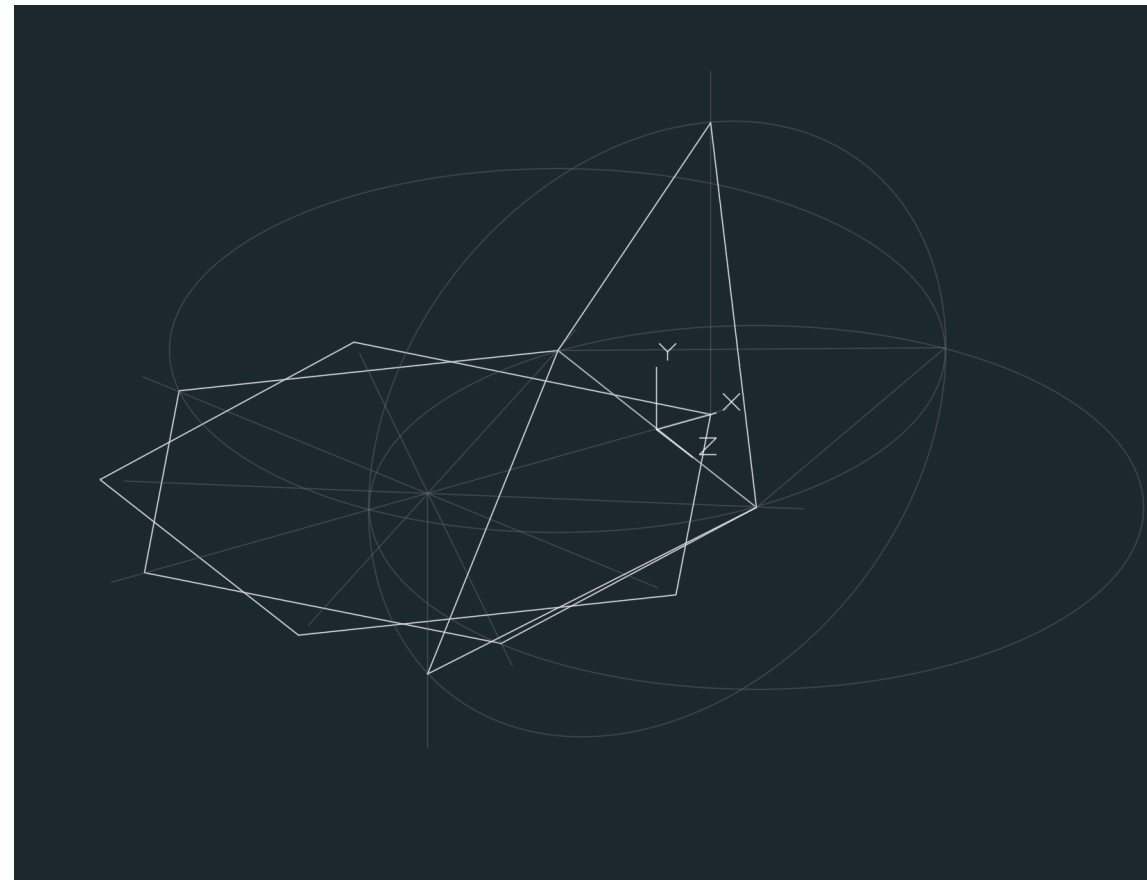


- Unir os dois objetos para criar o dodecaedro

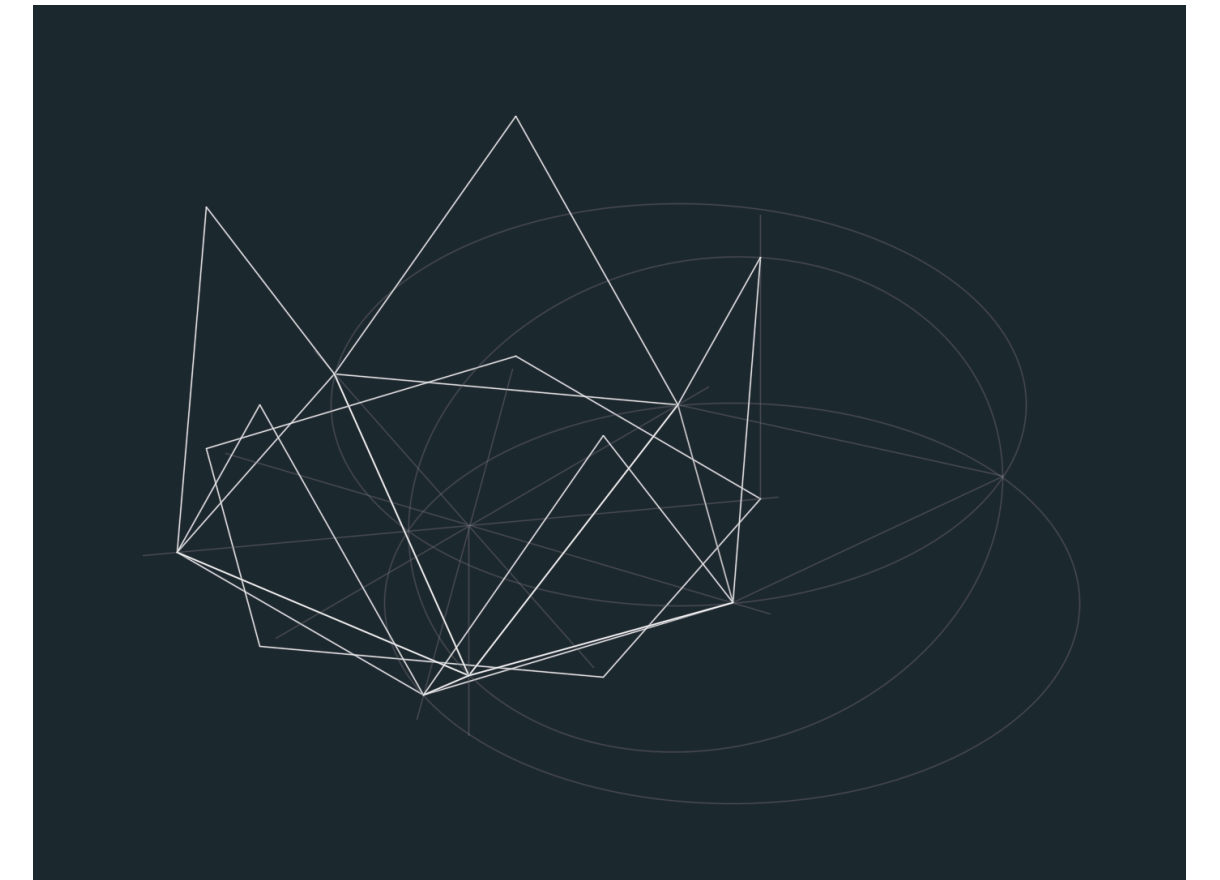
Exerc. 3 - Dodecaedro



- Criar a base da figura

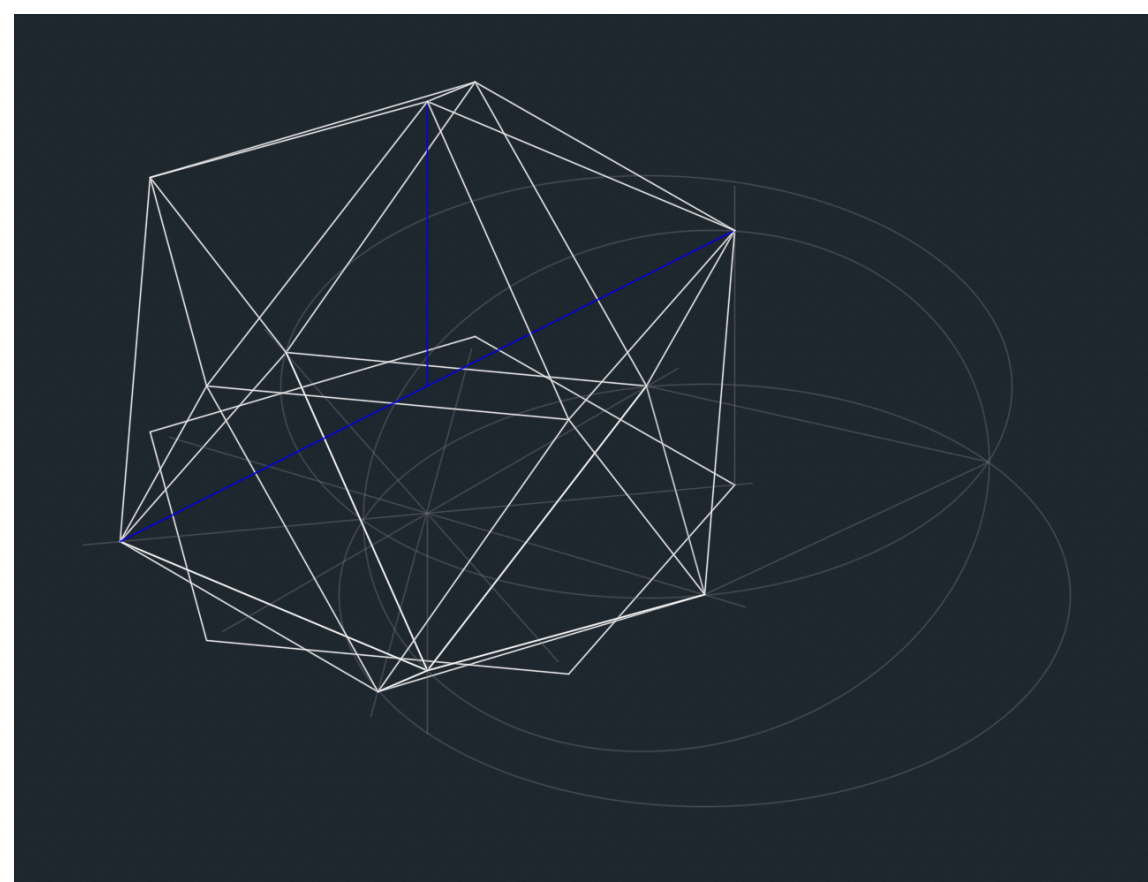


- Depois de construir todas as linhas auxiliares, unir os pontos de modo a criar estes dois triângulos

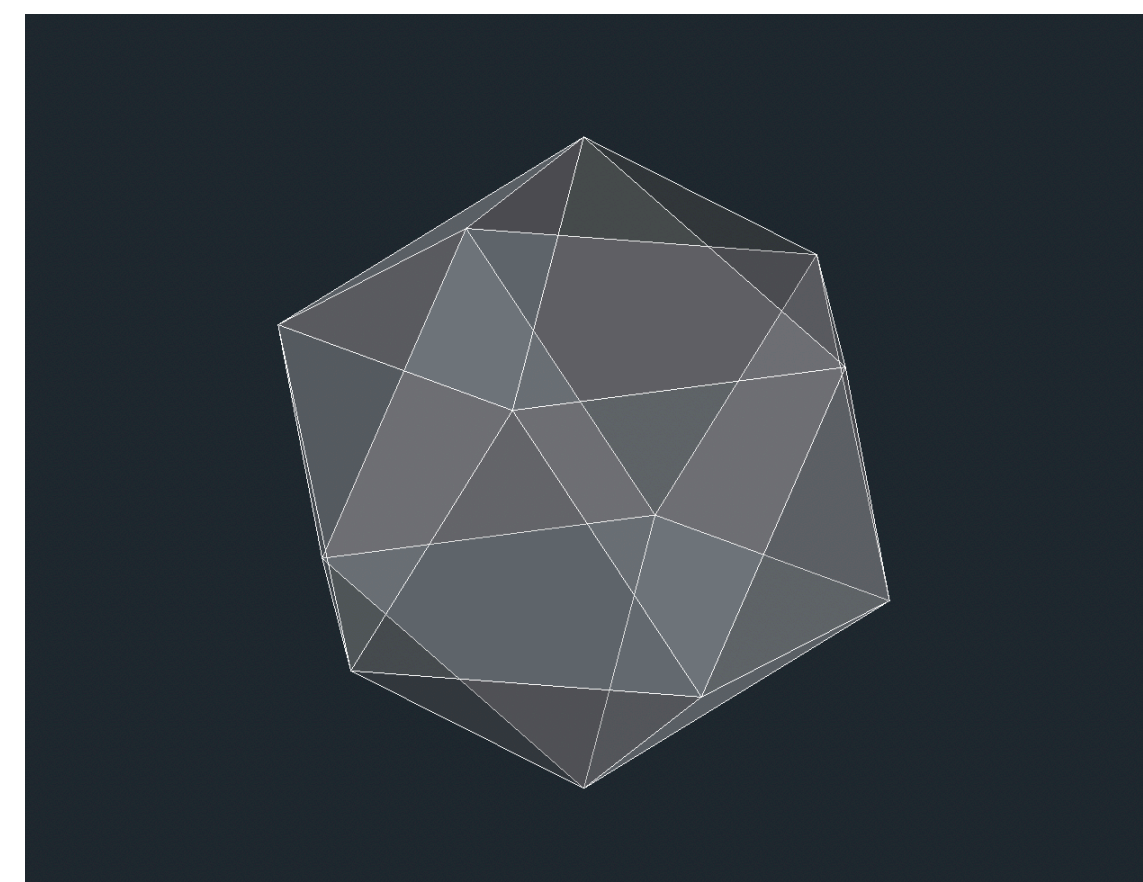


- Utilizar o comando ARRAYPOLAR para multiplicar a forma construída em torno da base

Exerc. 4 - Icosaedro

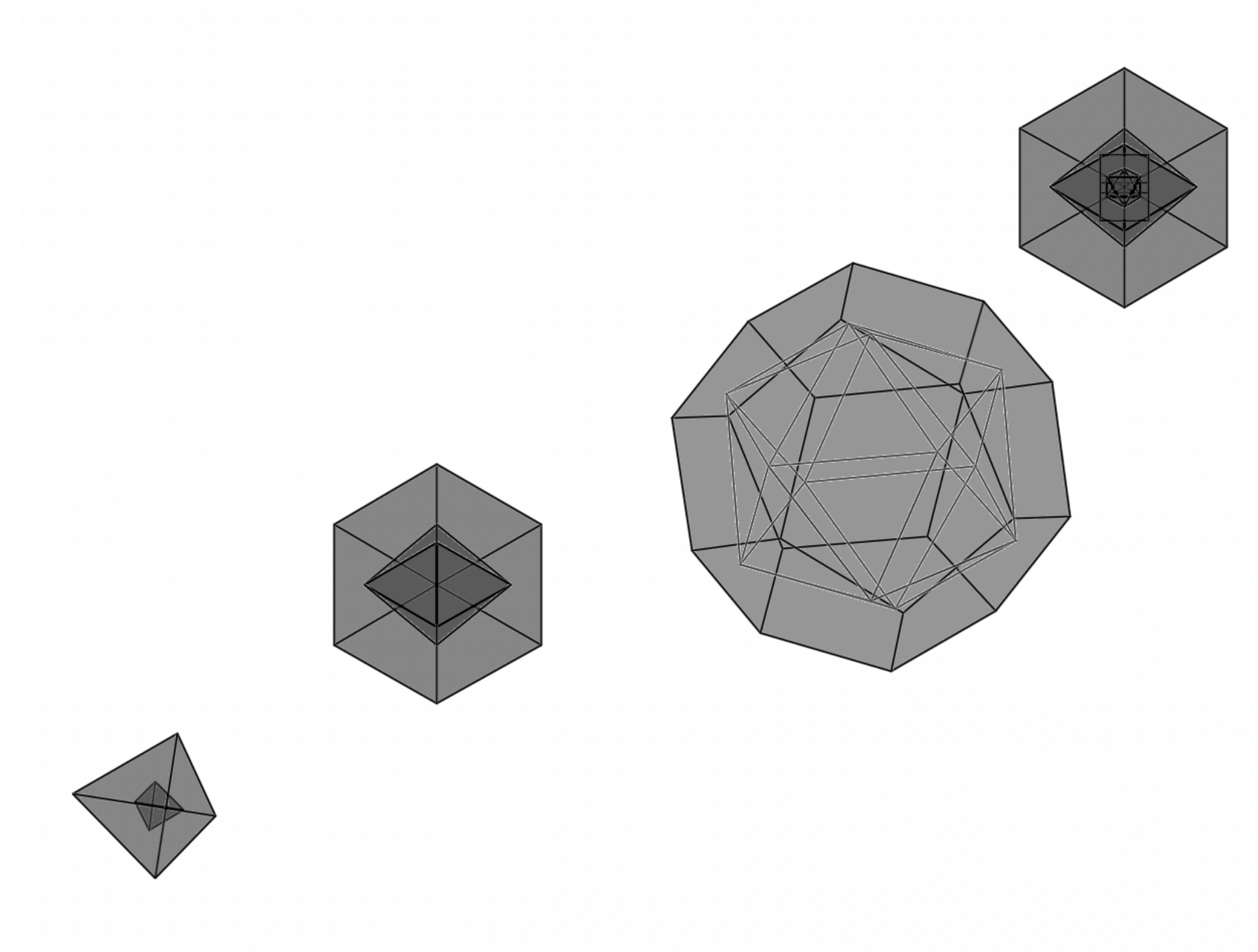


- Após unir os pontos, criar linhas auxiliares de modo a encontrar o centro da figura e unir as linhas restantes.

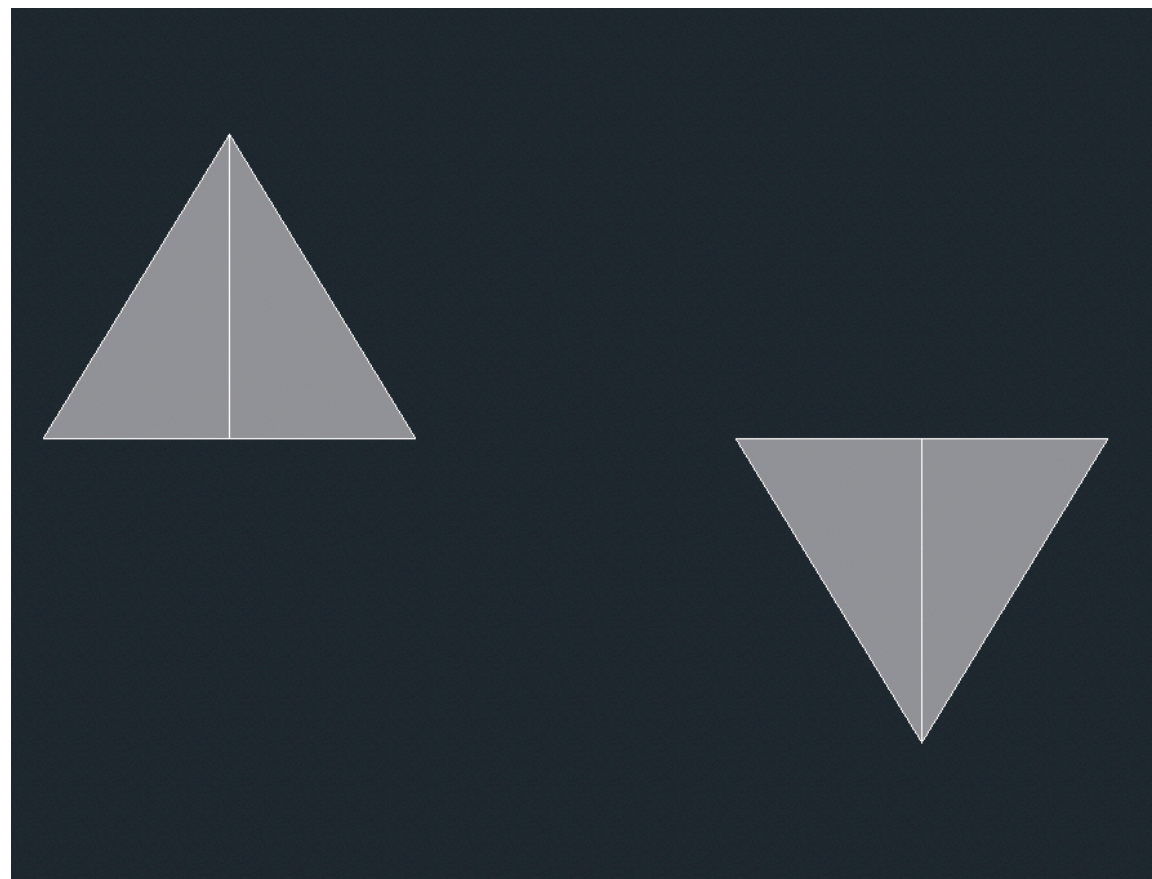


- Para preencher os triângulos, utilizar o comando 3dFACE

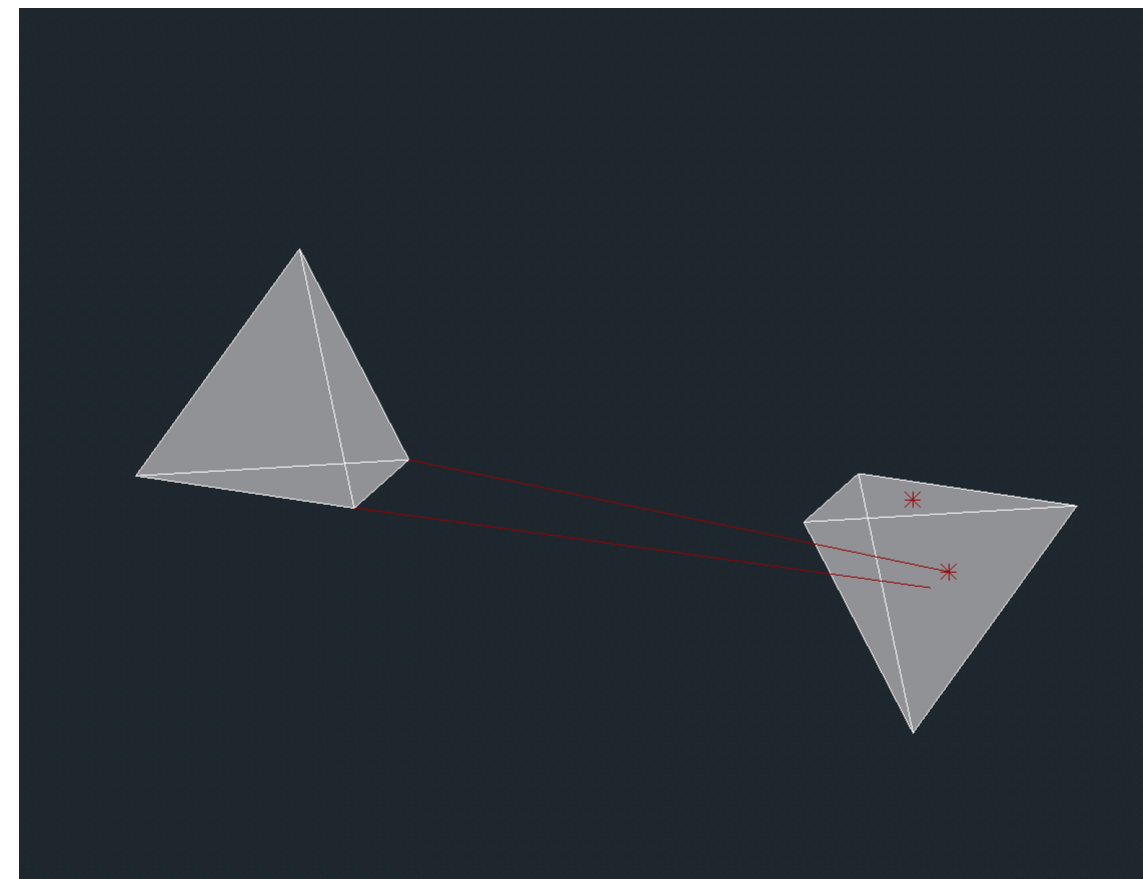
Exerc. 4 - Icosaedro



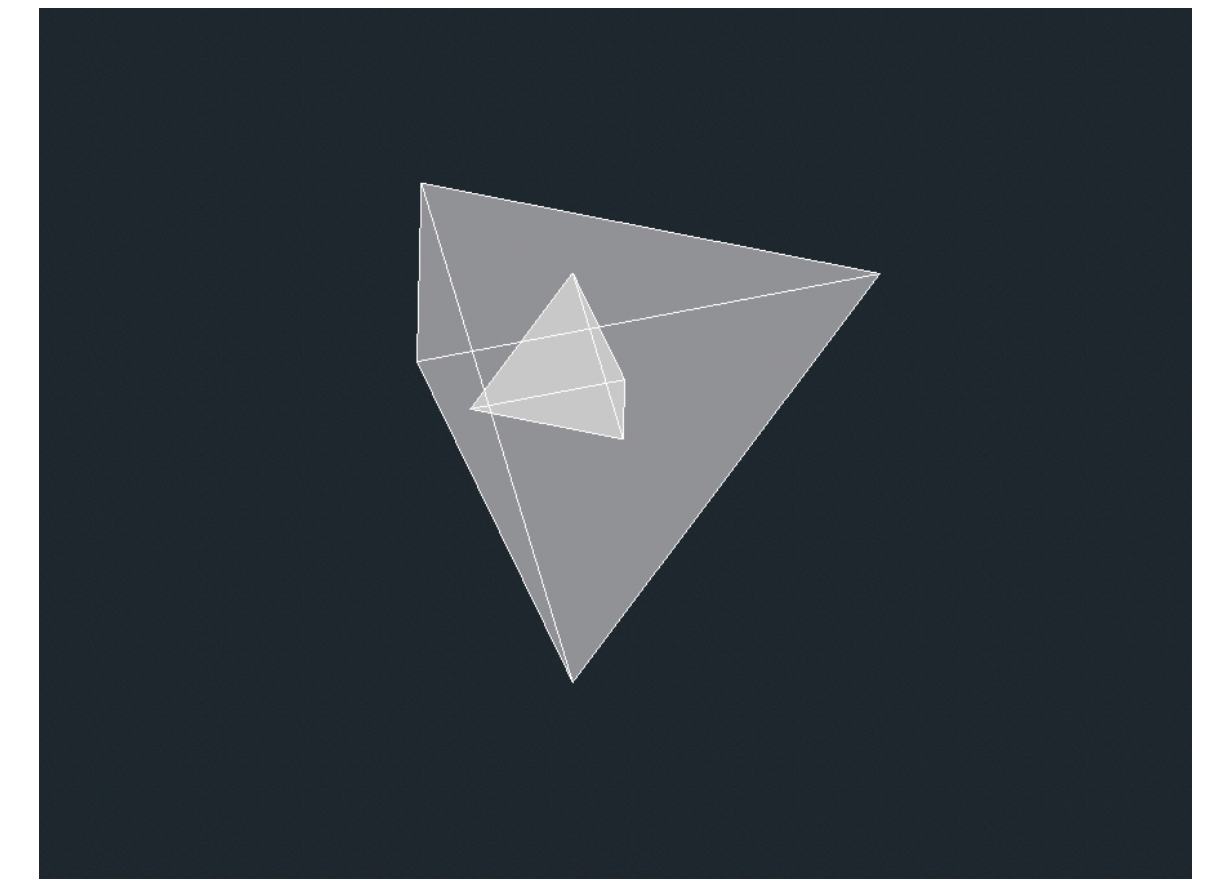
Exerc. 5- Dualidade



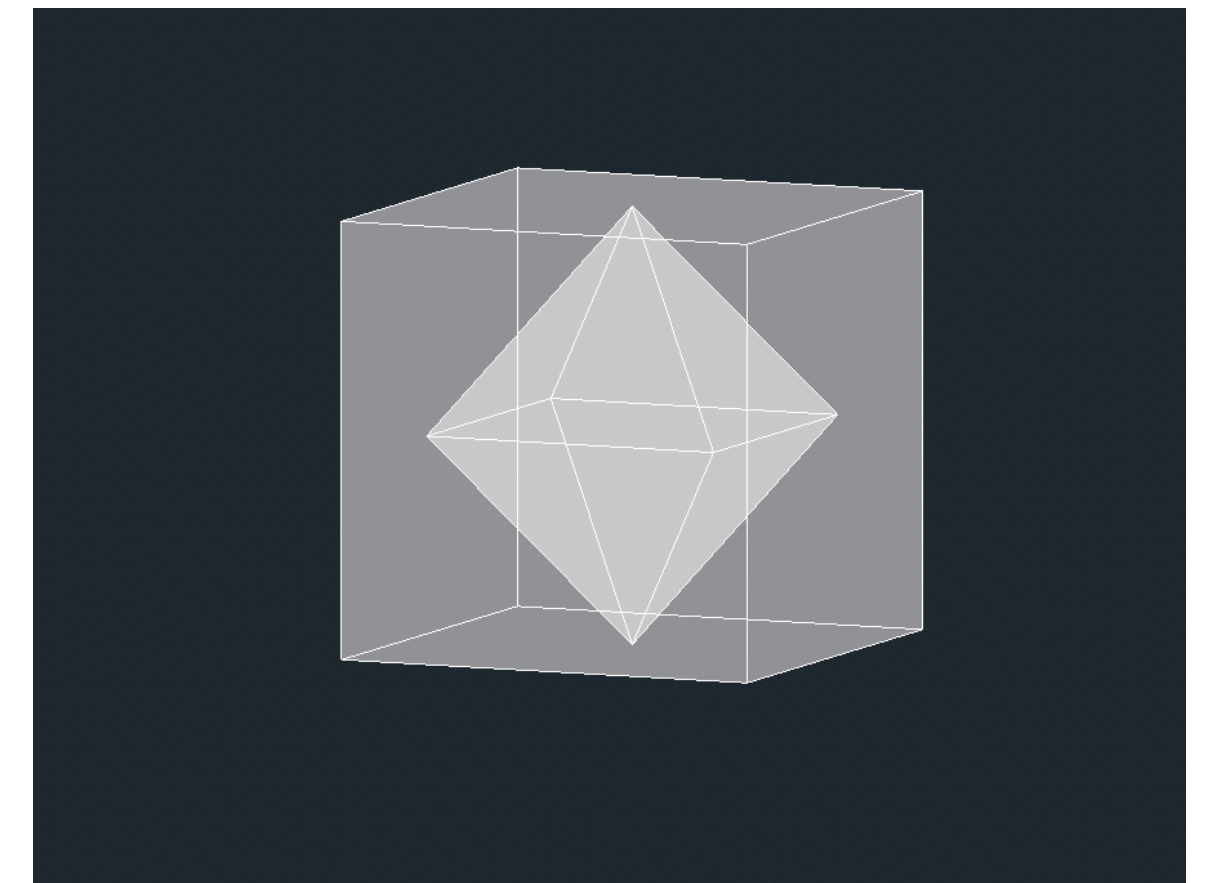
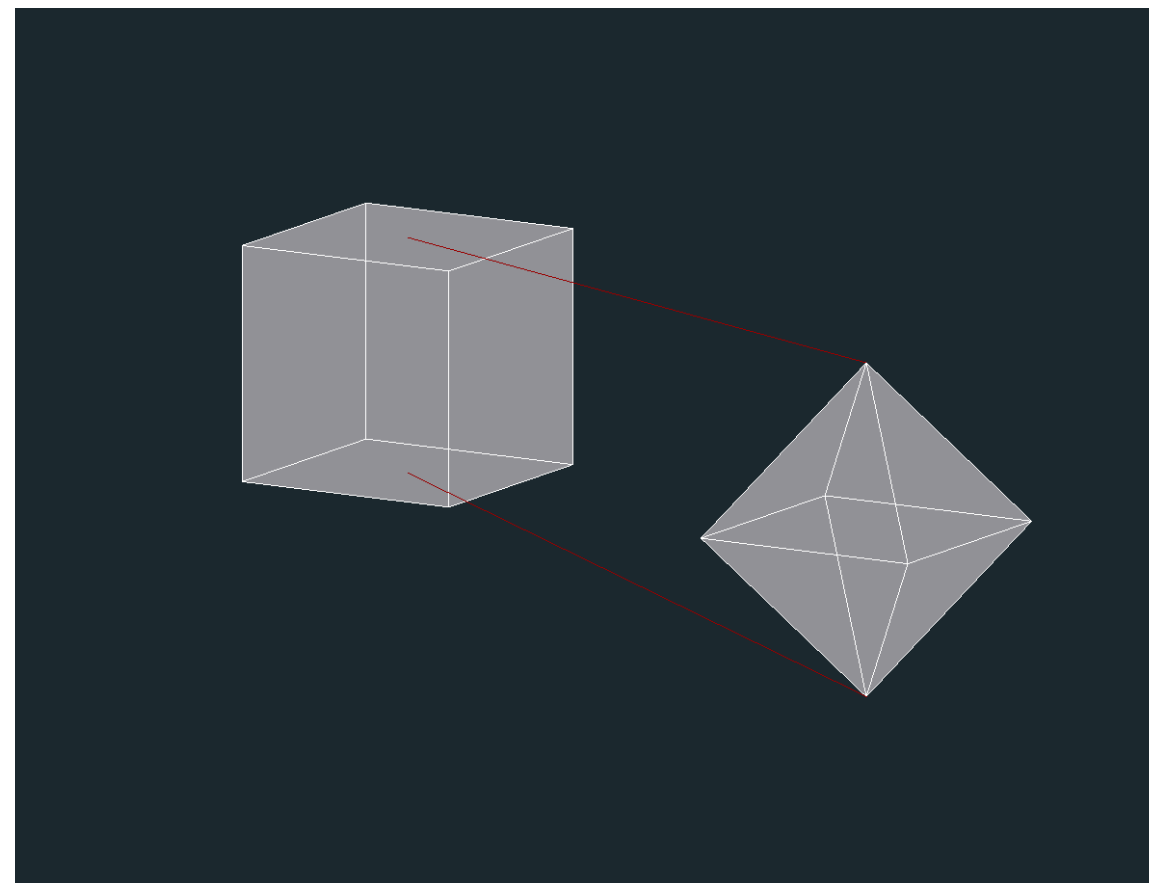
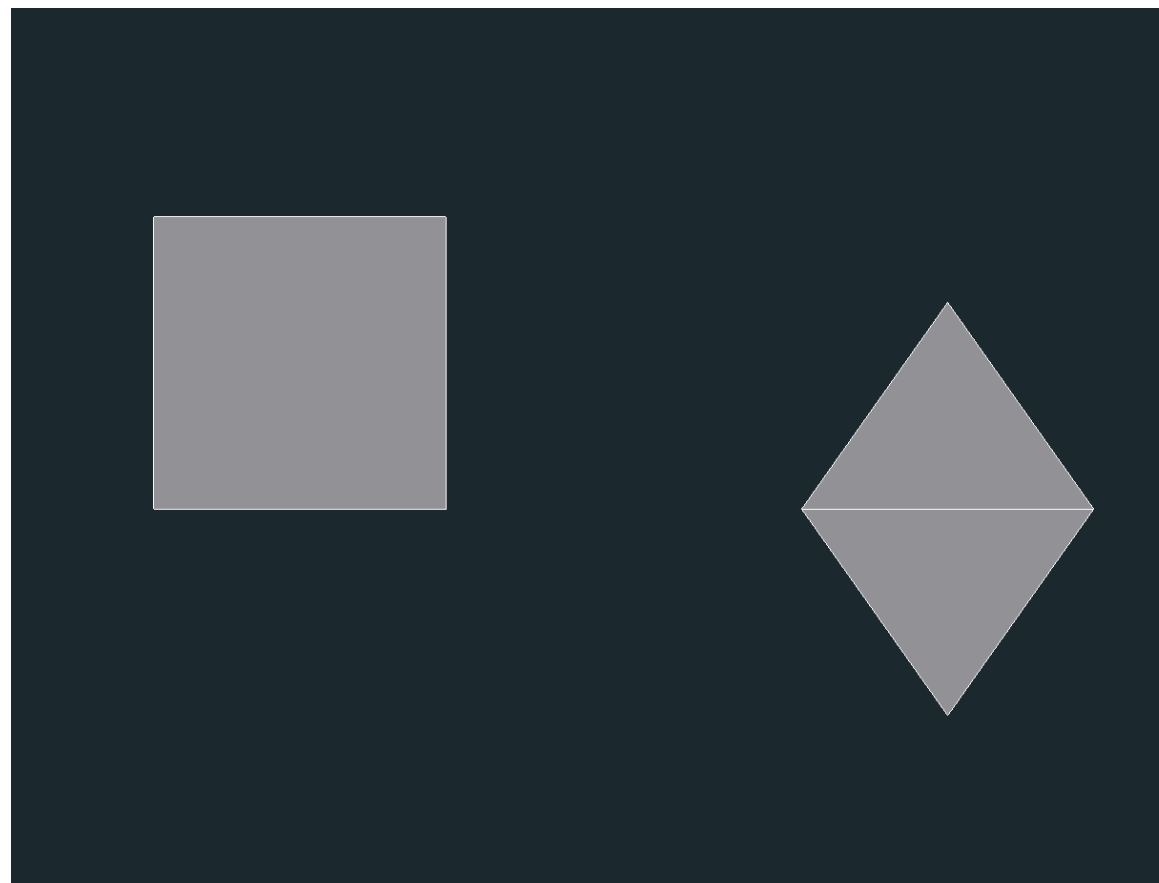
- Começar com dois tetraedros, num deles fazer o 3dROTATE



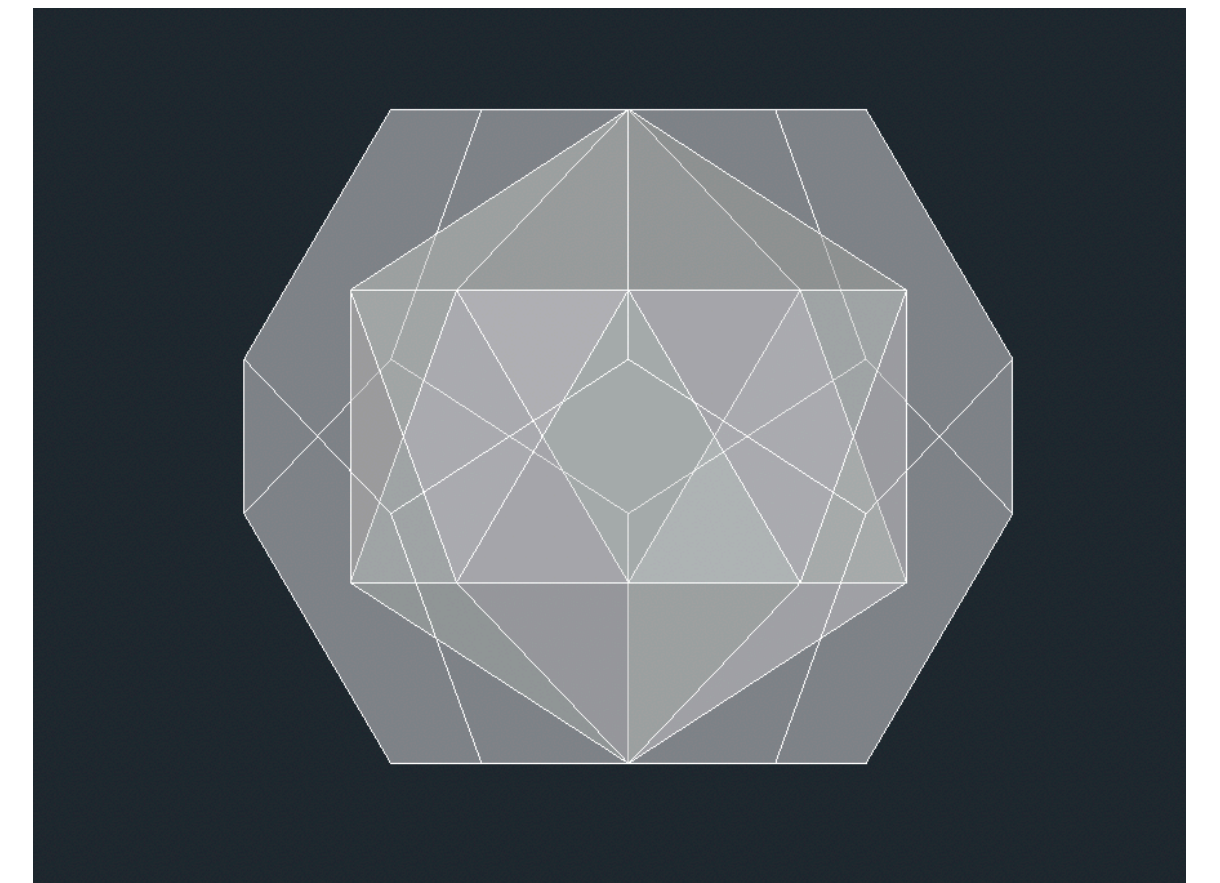
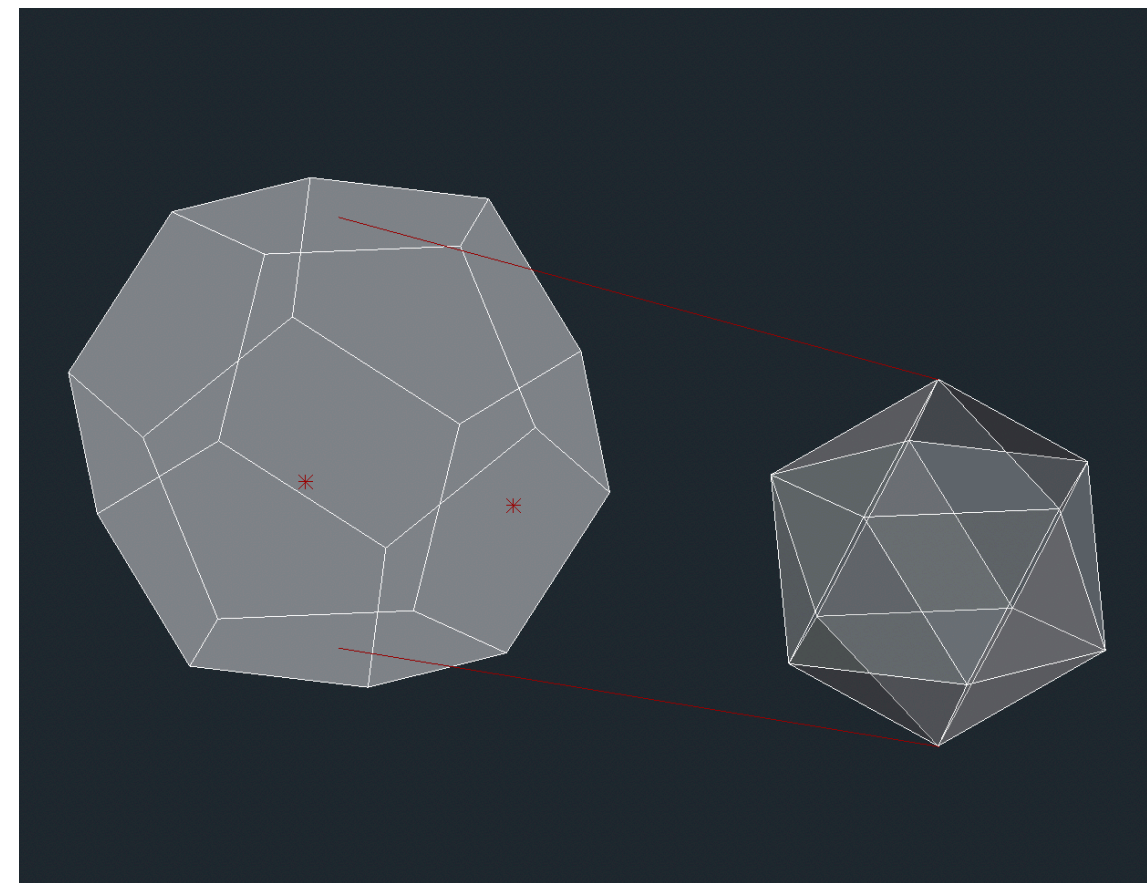
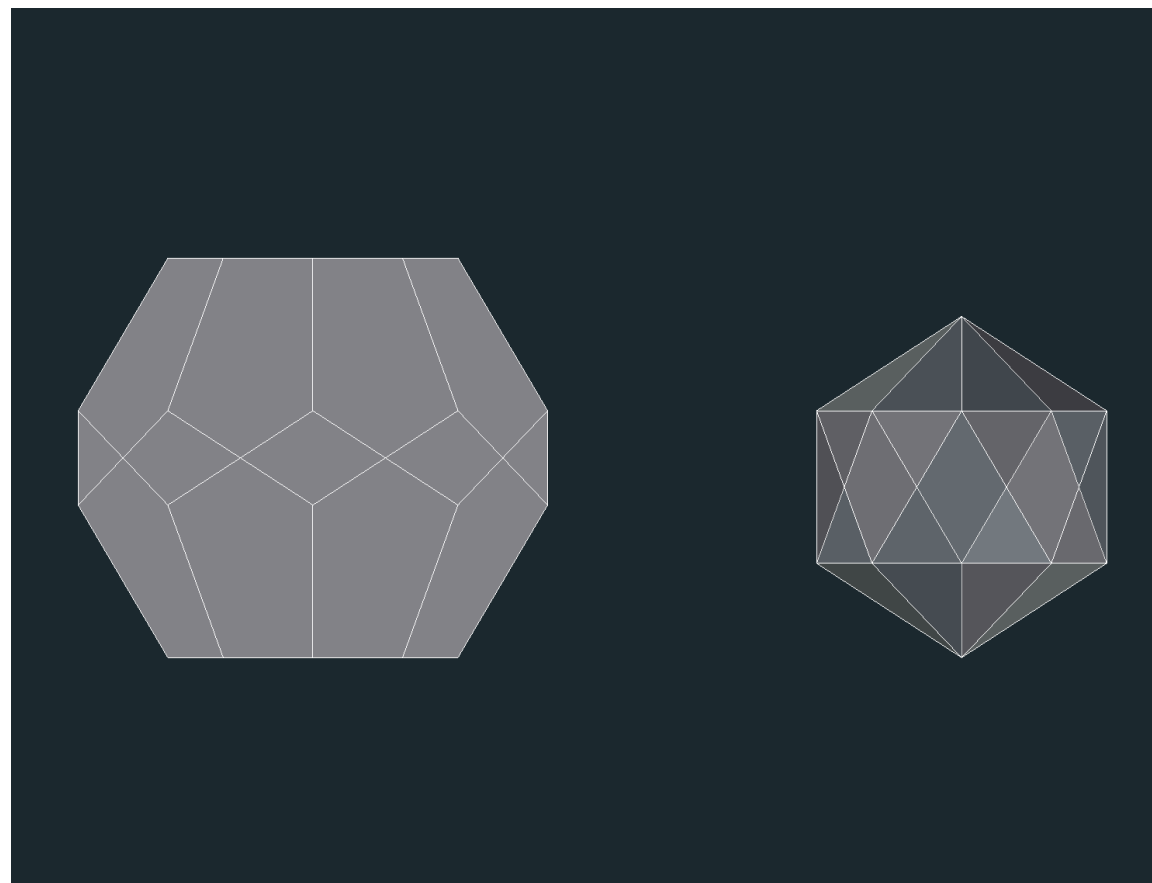
- Utilizando o comando align, selecionar dois vertices de uma das figuras e colocar esses pontos nos centros geométricos do outro objeto



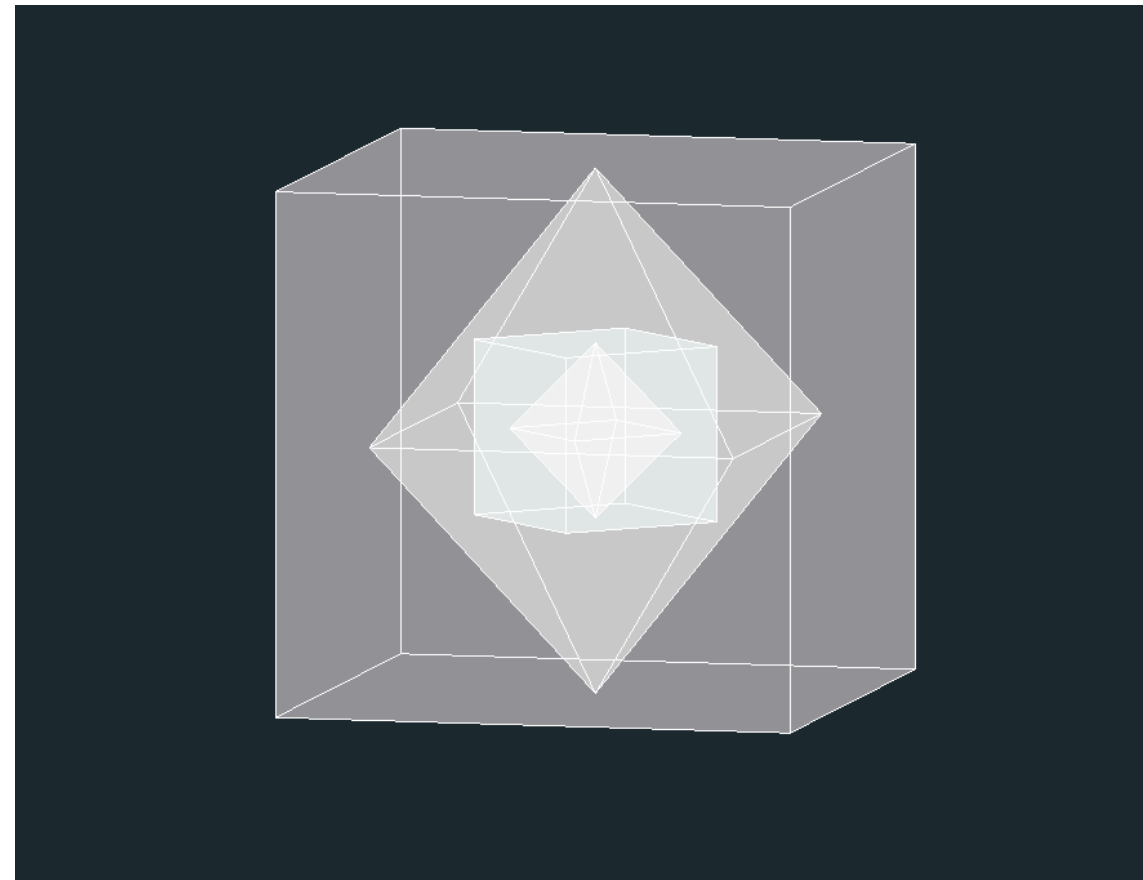
Exerc. 5.1 - Autodualidade do Tetraedro



Exerc. 5.2 - Dualidade Hexaedro/Octaedro



Exerc. 5.3 - Dualidade Dodecaedro/Icosaedro



Exerc. 5.3 - Duplidualidade Hexaedro/Tetraedro