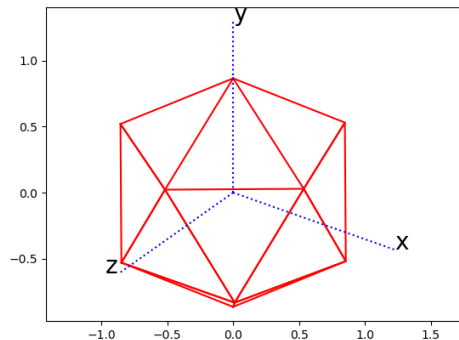
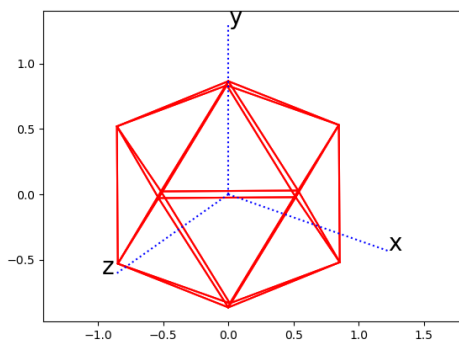


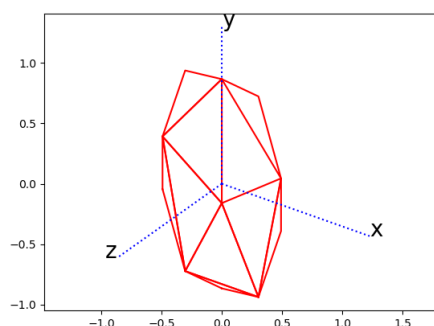
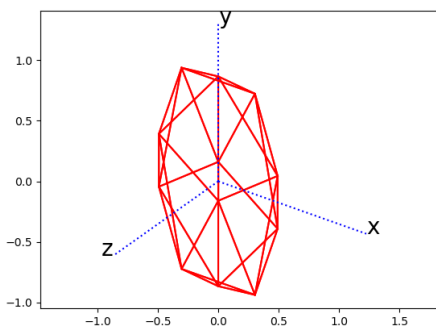
## Linear algebra Assignment3 report 106070038 杜葳葳

我設計的圖形是正二十面體(每一面皆為三角形，共有二十個面，十二個頂點)。



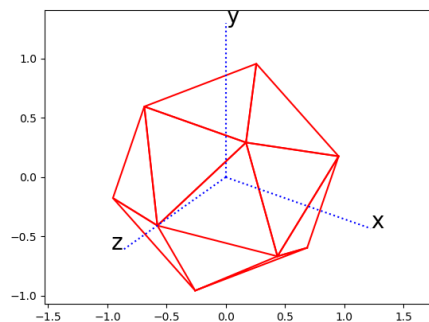
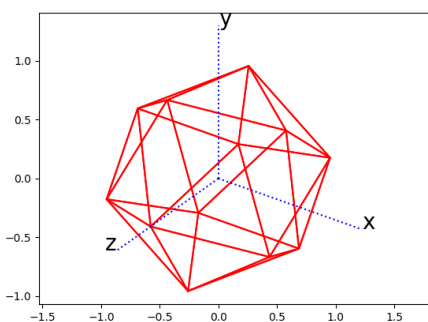
以下(一到八)為我設計的 transformation，左圖為原圖，右圖為經過 hidden 的圖一、skew

$\begin{bmatrix} 1/\sqrt{2} & 0 & 1/\sqrt{2} \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix}$



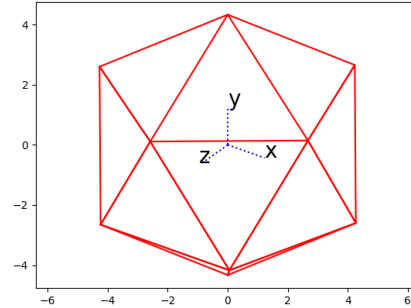
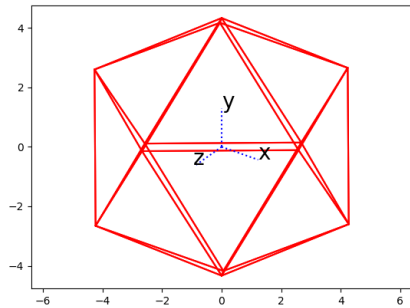
二、rotate x 90 degrees

$\begin{bmatrix} 1 & 0 & 0 \\ 0 & \cos(1/2 * (m * \pi)) & -\sin(1/2 * (m * \pi)) \\ 0 & \sin(1/2 * (m * \pi)) & \cos(1/2 * (m * \pi)) \end{bmatrix}$



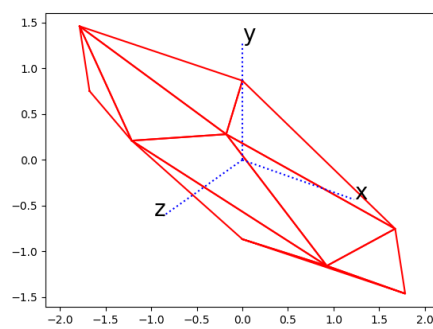
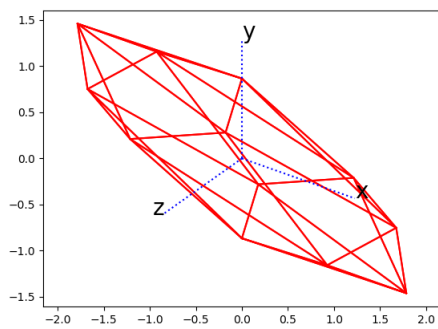
三、scale

[[5, 0, 0],  
[0, 5, 0],  
[0, 0, 5]]



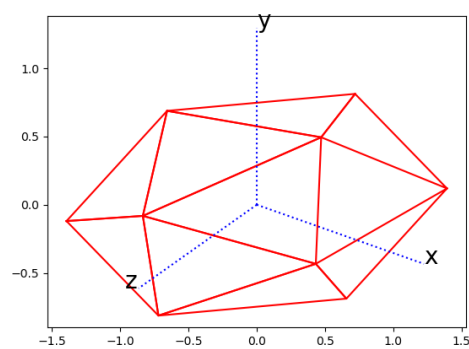
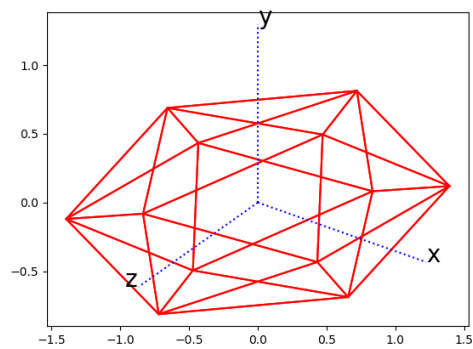
四、trans

[[1, 0, 3],  
[0, 1, 0],  
[0, 0, 1]]



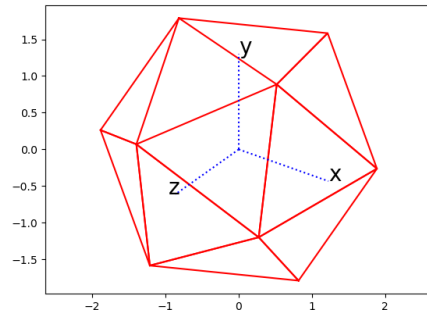
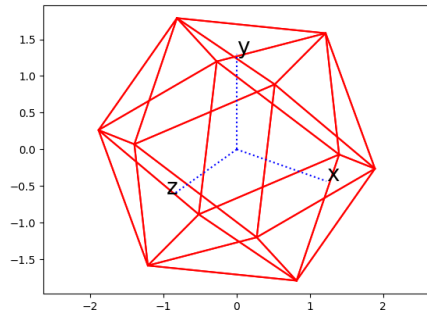
五、skew+rotate y 45degrees

[[1/m.sqrt(2), 1, -1/m.sqrt(2)],  
[-2/m.sqrt(2), 0, 0],  
[-1/m.sqrt(2), -1, -1/m.sqrt(2)]]



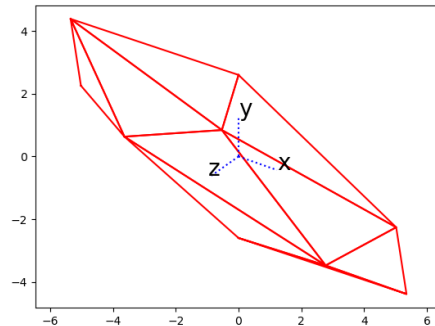
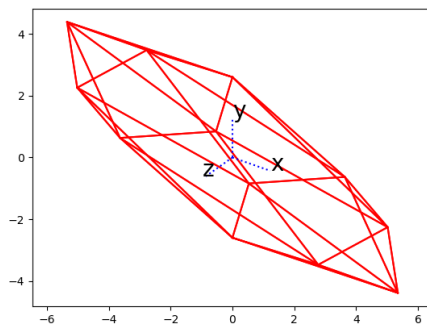
六、rotate z 30degrees+scale

$[[m.\text{sqrt}(3), -1, 0],$   
 $[1, m.\text{sqrt}(3), 0],$   
 $[0, 0, 2]]$



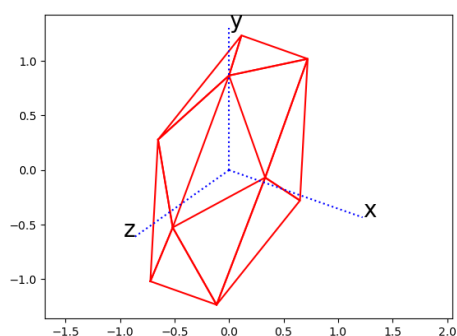
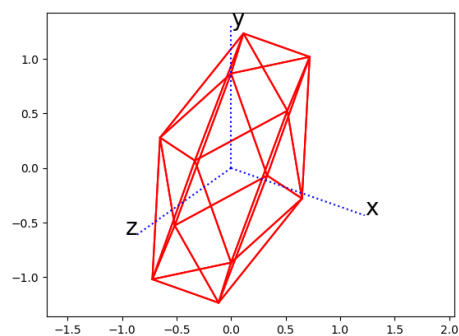
七、scale+trans

$[[3, 0, 9],$   
 $[0, 3, 0],$   
 $[0, 0, 3]]$



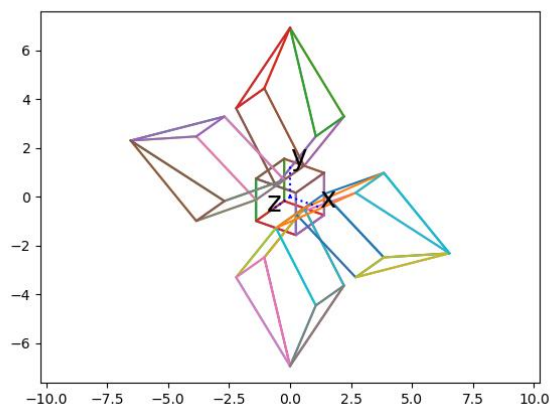
八、trans+skew

$[1/m.\text{sqrt}(2), 0, 1/m.\text{sqrt}(2)],$   
 $[0, 1, 0],$   
 $[0, 0, 2]$



九、另外，我原先設計一個像有四葉花瓣的花朵的圖形，但可能因為不是

convex，會有錯誤。



十、因為正二十面體對稱，很難看出 transformation 後的變化，所以我另外設計了一個七面體，以便看出變化。以下八張圖依序為經過上面的 transformation 後的結果。

