

Please create a nice looking 3D lissajous curve. You can find the curve equations at

https://en.wikipedia.org/wiki/Lissajous_curve

Please also change the coloring of the curve based on the distance of vertices from a plane (instead as from the origin as it is in the starter code).

--from the lab notice on the BrightSpace

Tasks:

1. Modify the code inside "var implicit = new function()", including:
 - a. initializing the normal vector
 - b. initializing the normal distance from origin
 - c. calculating the distance from the point to the plane based on the formula
2. Modify the code inside "lissajousCurve.prototype.getPoint = function (t)" based on the formula below.
3. Loop over all vertices and update their color based on the distance to the plane
 - a. Modify codes inside "var dCol = function (nld)" in "updateLissajous()" function

packages needed in this lab:

1. dat.gui
2. three

Some API Introductions:

THREE.Curve: <https://threejs.org/docs/#api/en/extras/core/Curve>

THREE.Vector3.multiplyScalar: <https://threejs.org/docs/#api/en/math/Vector3.multiplyScalar>

THREE.TubeGeometry: <https://threejs.org/docs/#api/en/geometries/TubeGeometry> ,focus on paramters: tubularSegments and radialSegments

In term of the parameters inside the getPoint() function of the THREE.Curve() object:
t means the position of the curve, must be range from 0 to 1.

Try these formulas to draw Lissajous curve:

$$X = \cos(a*2\pi*t+\delta)$$

$$Y = \sin(b*2\pi*t)$$

$$Z = \cos(2\pi*t)$$

Final results:

