CZ2003 Computer Graphic

Lab 2

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Matriculation Number: U1521567A

File	Description
StraightLine.wrl	Straight Line defined parametrically
Circle.wrl	Circle defined parametrically
Circle_arc1.wrl	A segment of a circle(arc) defined parametrically – Top Right
Circle_arc2.wrl	A Segment of a circle(arc) defined parametrically – Bottom Right
Ellipse.wrl	Ellipse defined parametrically
Ellipse_arc.wrl	Segment of an ellipse defined parametrically
2D_Spiral.wrl	2D Spiral defined parametrically
3D_Helix.wrl	3D Helix defined parametrically
3D_Helix_2.wrl	3D Helix with values for the formula altered
Circle_lowRes.wrl	Circle file with resolution changed to 5
Ellipse_lowRes.wrl	Ellipse with resolution changed to 5
2D_Spiral_lowRes.wrl	2D Spiral with resolution changed to 5
3D_Helix_lowRes.wrl	3D Helix with resolution changed to 5

Define parametrically in different files

- **straight line segment**
- **circle and its arc**
- **ellipse and its arc**
- **2D spiral**
- **3D helix**

Straight Line Segment
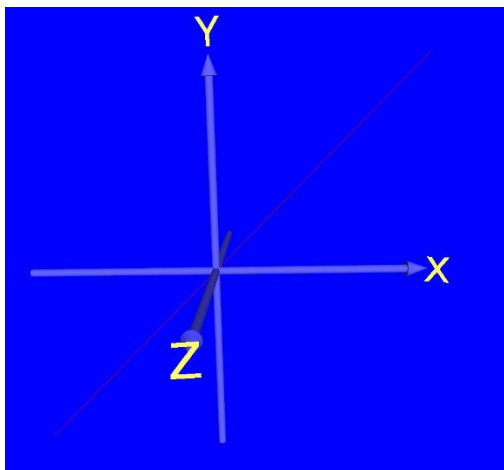
x =1-2*u;   Parameters [0 1]

Y=1-2*u;   Resolution: 100

Z=0;

Circle

x = cos(u*2*pi);   Parameters [0 1]

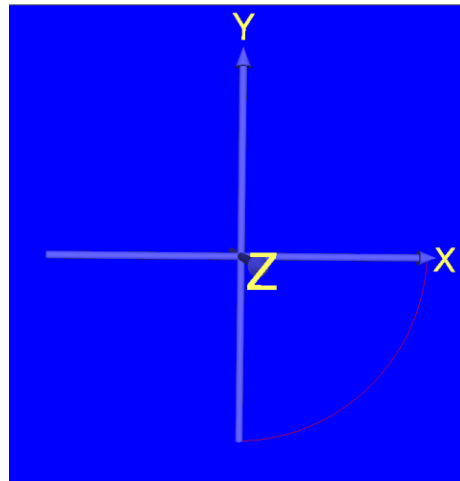y = sin(u*2*pi);   Resolution: 100
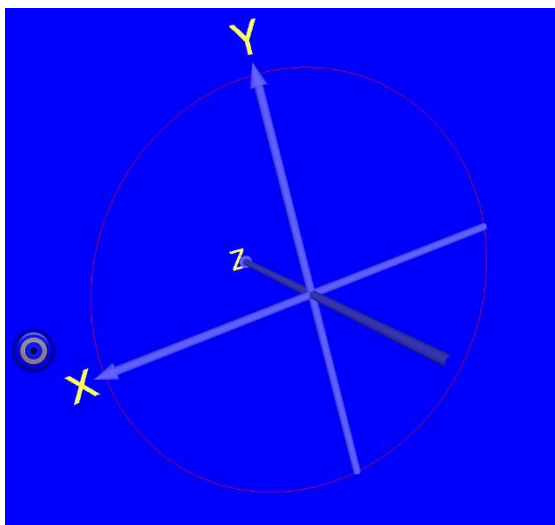
z = 0;

Circle Arc

definition

x = cos (u *1/2*pi);

y = sin (u *1/2* pi);

z = 0;"
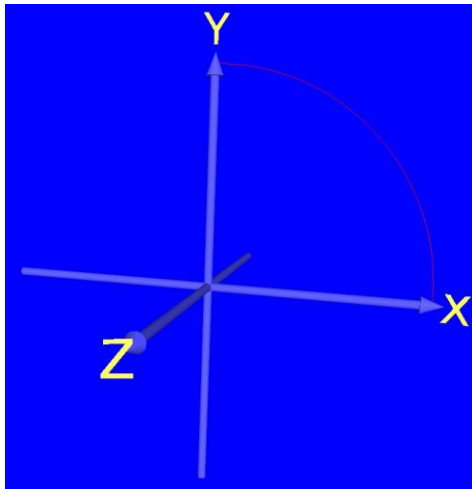
Parameters [0 1]

Resolution: 100

definition

x = cos (u *-1/2* pi);

y = sin (u *-1/2*pi);
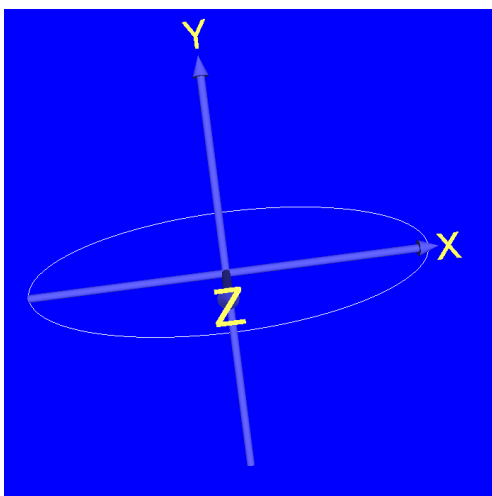
z = 0;

Parameters [0 1]

Resolution: 100

Ellipse

definition

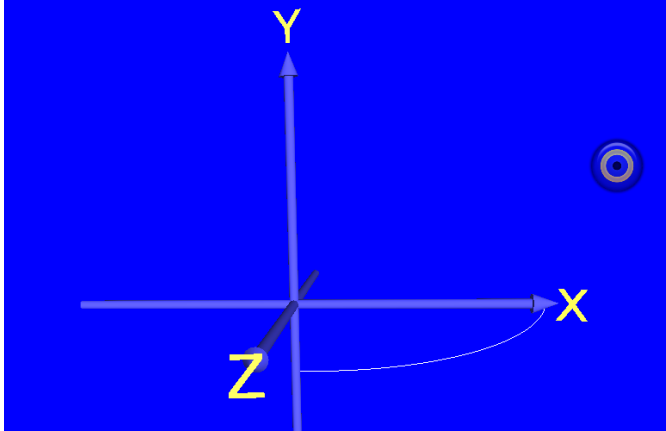x = cos (u *2*pi);

y = 0.3*sin (u *2* pi);

z = 0;

parameters [0 1]

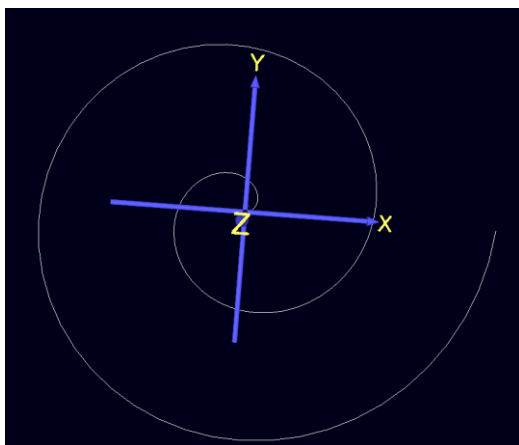## Ellipse Arc

x = cos (u * 1/2* -pi);

y = 0.3*sin (u *1/2* -pi);

z = 0;

parameters [0 1]

Res: 100

Observation: During this experiment, I observed that were mainly 2 ways to change shapes, one was to change the formula itself and the other way was to alter the parameters for the shape. By keeping the parameters at [0 1] for all shapes, the only thing that was changed throughout was the formula definition itself. Additionally, modifying the resolution will also cause the shape to be different, as shown in the last part of this report.
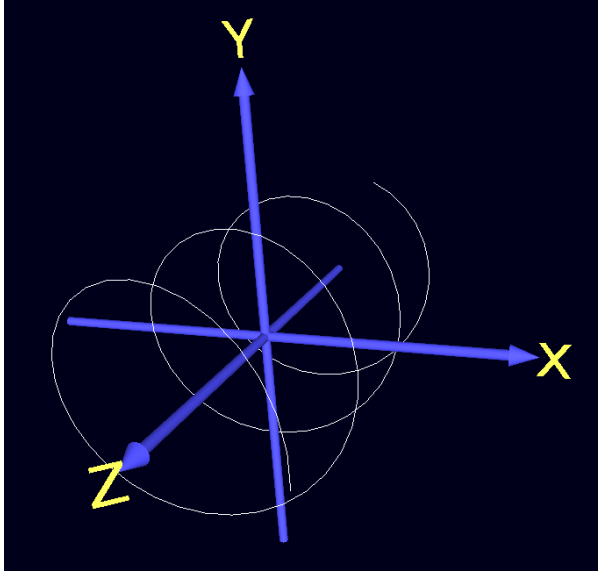
2D Spiral

x = u * cos (u *pi *4);

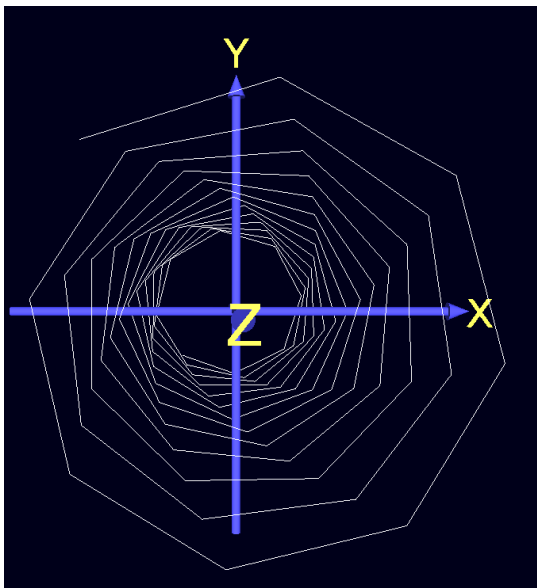y = u * sin(u*pi*4);

z = 0;

parameters [0 1]

Res: 100

3D Helix

x = 0.5*cos(20*u);

y = 0.5*sin(20*u);

z = 1-2*u;

parameters [0 -1]

Res: 100
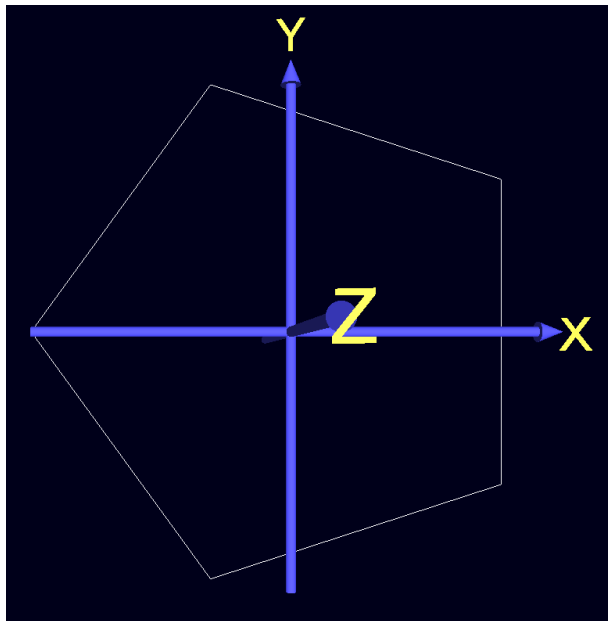

x = 0.5*cos(80*u);

y = 0.5*sin(80*u);

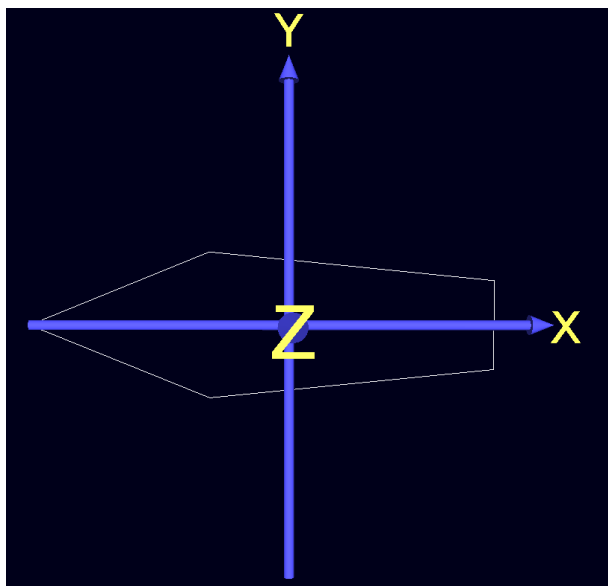z = 1-2*u;

parameters [0 -1]

Res: 100

Explore what happens when you change the curves resolutions to as little as 2 and see how the shape of the curves changes.
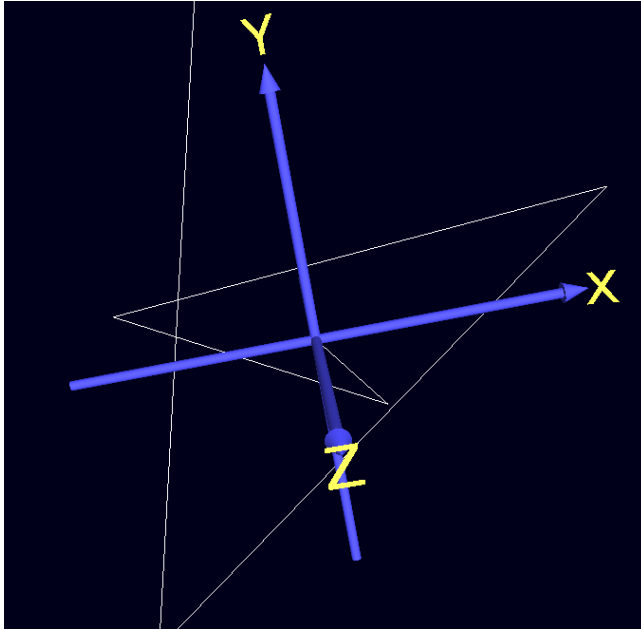
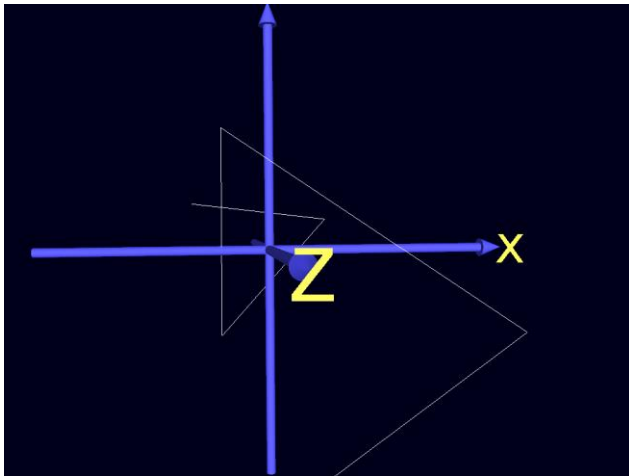**Changing the resolution:**

Circle Low Res (5)

Ellipse Low Res (5)

2D Spiral Low Res (5)

3D Helix Low Res (5)

By changing the resolution, the smoothness of the shapes will be affected. The lower the resolution, the more "edge" a shape have.