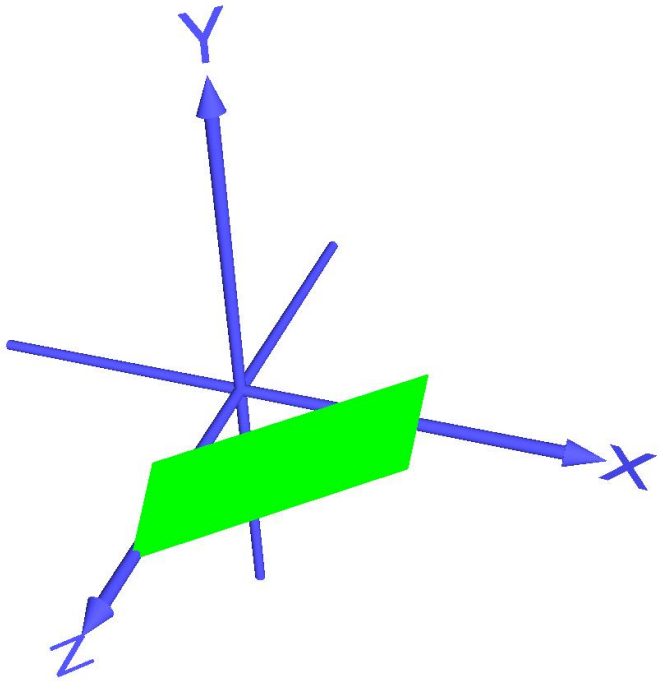
CZ2003: Lab 2

Name:	**Last two digits of the matric card:**

Q1a

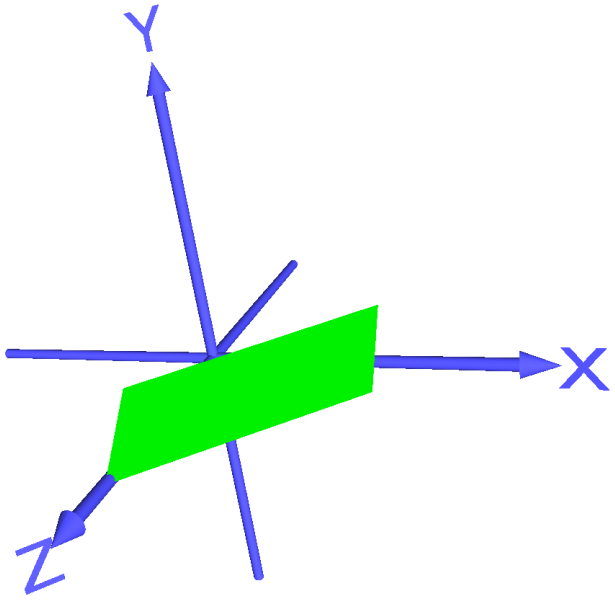
Plane 1



Name of the file: Q1a.wrl

The equation is defined as:
x=6+u*(0-6)+v*(6-6)
y=2+u*(2-2)+v*(0-2)
z=0+u*(6-0)+v*(2-0)
with u as the parameter domain [0, 1], v as the parameter domain [0, 1] and minimum sampling resolution set to [1 1].

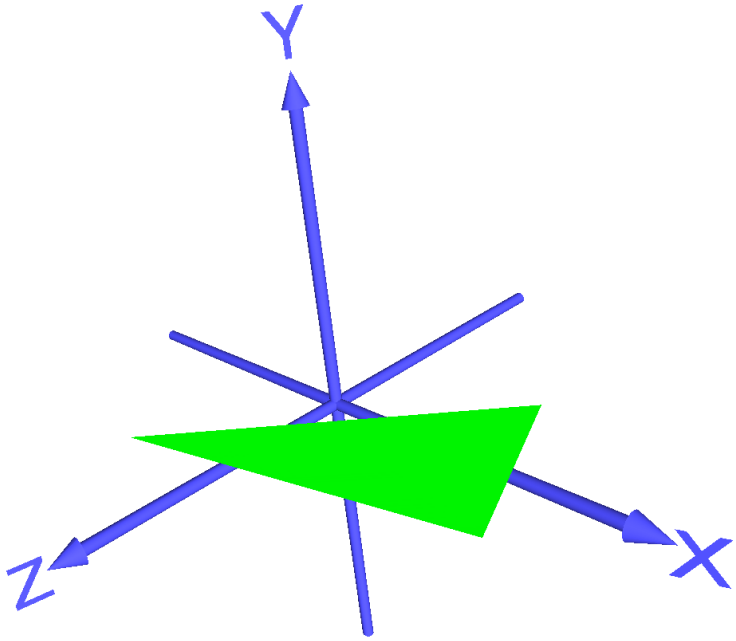
Plane 2



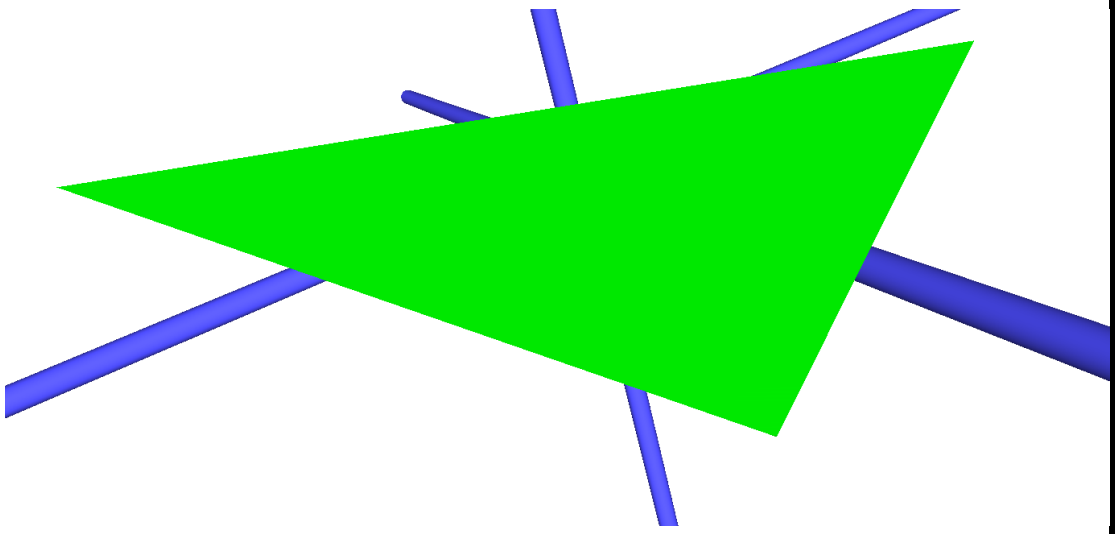
Plane 2 is defined with the same equation as above with sampling resolution [10 10].

Note

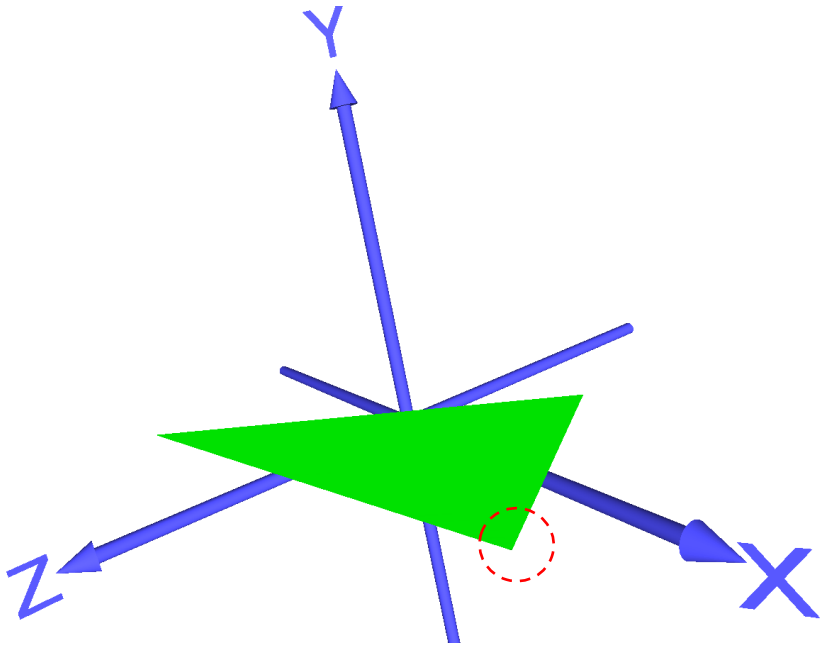
As shown on Plane 2, changing the sampling resolution will not have any effect on the plane. The minimum sampling resolution to create a plane is [1 1].

Q1b	Triangular Polygon 1
	
	Name of the file: Q1b.wrl
	The equation is defined as: x=6+u*(-6)+v*(0+u*6) y=2+u*(0)+v*(-2+u*0) z=0+u*(6)+v*(2+u*(-6)) with u as the parameter domain [0, 1], v as the parameter domain [0, 1] and minimum sampling resolution set to [1 190].

Triangular Polygon 1 Zoom in

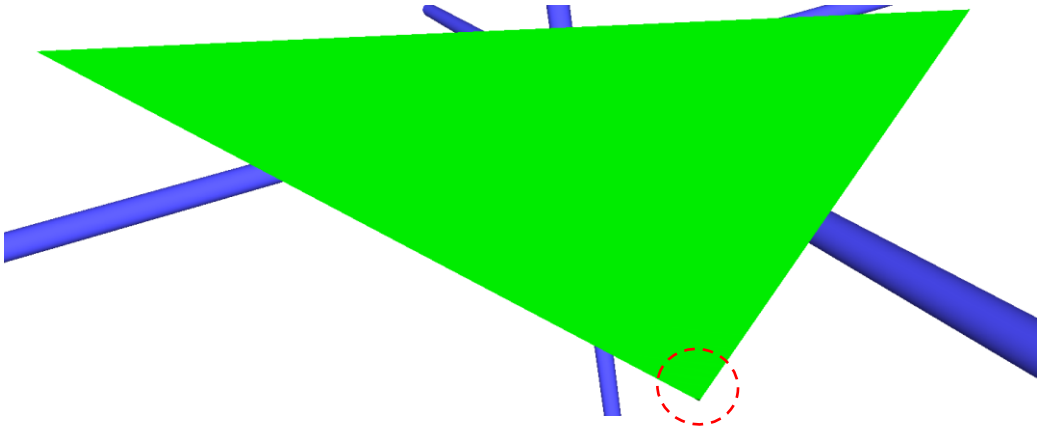


Triangular Polygon 2

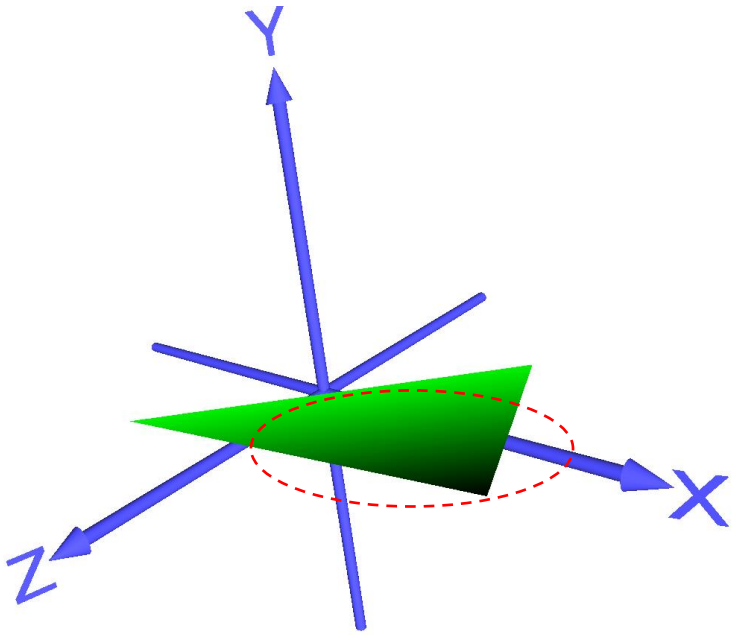


Triangular Polygon 2 is defined with the same equation as Triangular Polygon 1 with sampling resolution [1 170].

Triangular Polygon 2 Zoom in

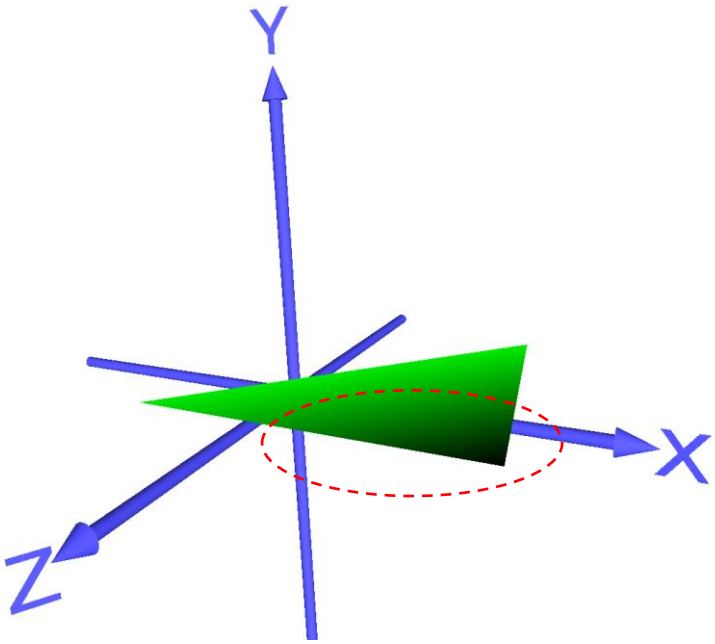


Triangular Polygon 3



Triangular Polygon 3 is defined with the same equation as Triangular Polygon 1 with sampling resolution [190 1].

Triangular Polygon 4



Triangular Polygon 4 is defined with the same equation as Triangular Polygon 1 with sampling resolution [1 1].

Note

In Triangular Polygon 2 when the sampling resolution in parameter v is reduce, you will notice small dark colour at the bottom right of the triangle. As there are insufficient line to cover the surface of the bottom right since the line of parameter v is draw horizontal.

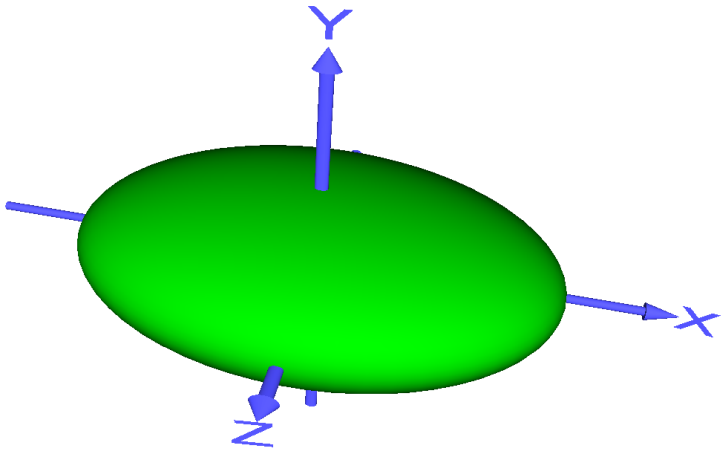
In Triangular Polygon 3, the sampling resolution are swap between u and v. Notice the dark colour of the surface is form at the bottom right of the triangle. As the sampling resolution parameter of u is drawn vertically from the bottom right of the triangle. Due to the increase of line at that area, dark colour surface is form.

In Triangular Polygon 4, when the sampling resolution are reduced to [1 1]. Notice the same dark colour surface is form.

The minimum sampling resolution for triangular polygon for full surface in green is [1 190] and the minimum sampling resolution for triangular polygon without considering the colour of the surface is [1,1].

Q1c

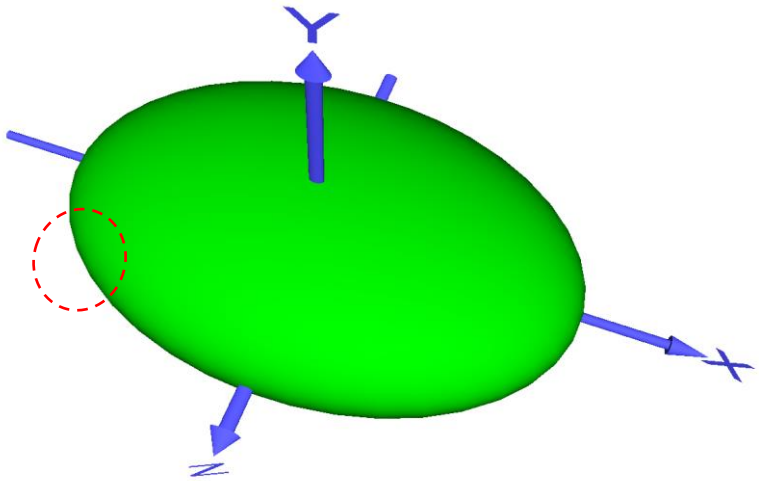
Ellipsoid 1



Name of the file: Q1c.wrl

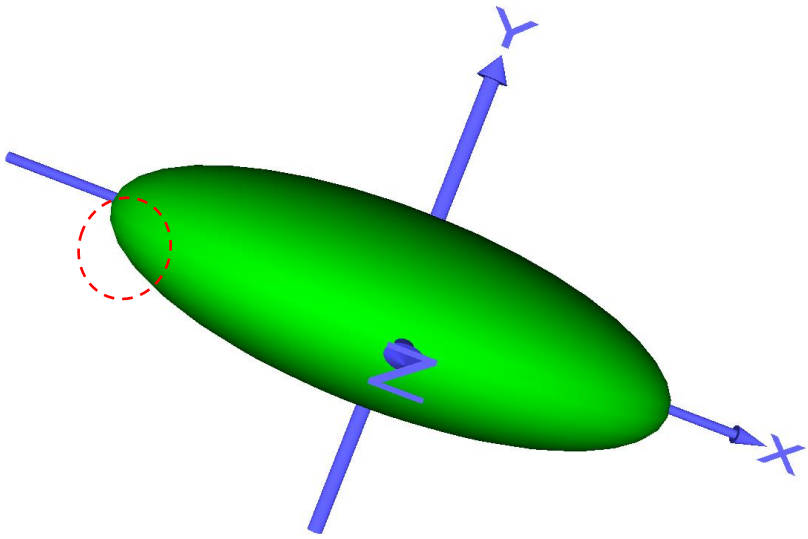
The equation is defined as:
x=6*cos(u*(pi/2)+((-pi/2)*(1-u)))*(sin(v*pi+(-pi)*(1-v)))
y=2*sin(u*(pi/2)+((-pi/2)*(1-u)))
z=4*cos(u*(pi/2)+((-pi/2)*(1-u)))*(cos(v*pi+(-pi)*(1-v)))
with u as the parameter domain [0, 1], v as the parameter domain [0, 1] and minimum sampling resolution set to [40 60].

Ellipsoid 2



Ellipsoid 2 is defined with the same equation as Ellipsoid 1 with sampling resolution [40 40].

Ellipsoid 3



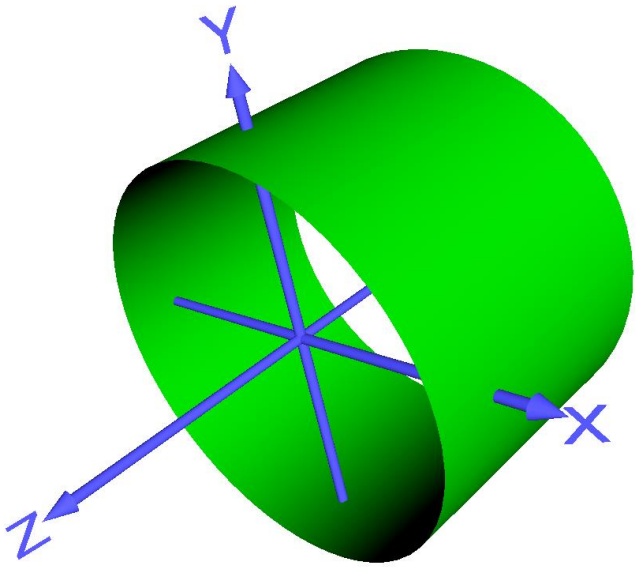
Ellipsoid 3 is defined with the same equation as Ellipsoid 1 with sampling resolution [20 60].

Note

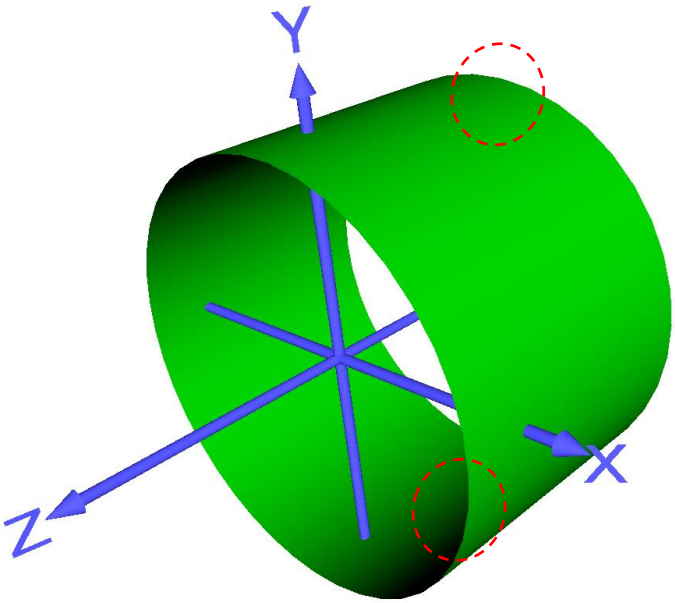
In Ellipsoid 2 the sampling resolution of v is reduced to 40. Notice the smooth curve disappear from the top view of Ellipsoid.

In Ellipsoid 3 the sampling resolution of u is reduced to 20. As shown on Ellipsoid 3 the smooth curve disappears from front view of the Ellipsoid.

In conclusion, the minimal sampling resolution for the Ellipsoid is [40 60].

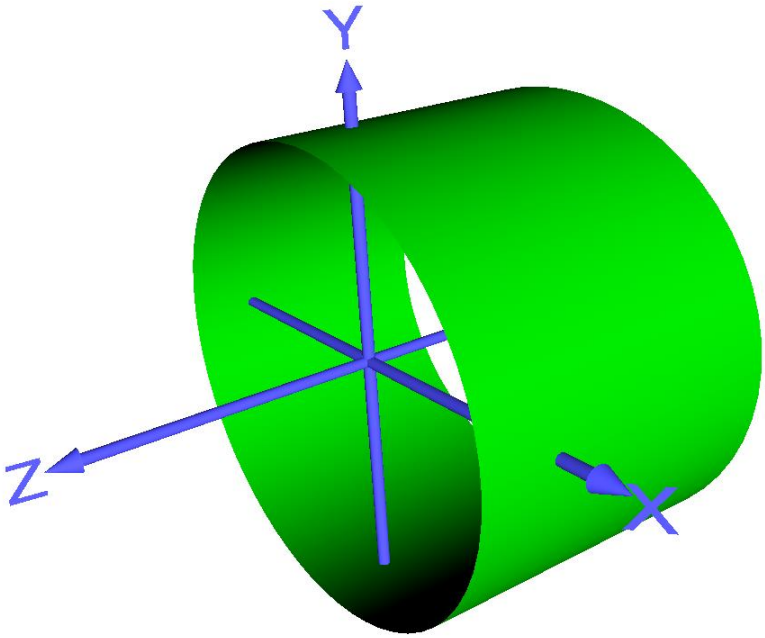
1d	Cylindrical Surface 1
	
	Name of the file: Q1d.wrl
	The equation is defined as: x=6*cos(u*2*pi) y=6*sin(u*2*pi) z=(-6)+v*(2-(-6)) with u as the parameter domain [0, 1], v as the parameter domain [0, 1] and minimum sampling resolution set to [60 1].

Cylindrical Surface 2

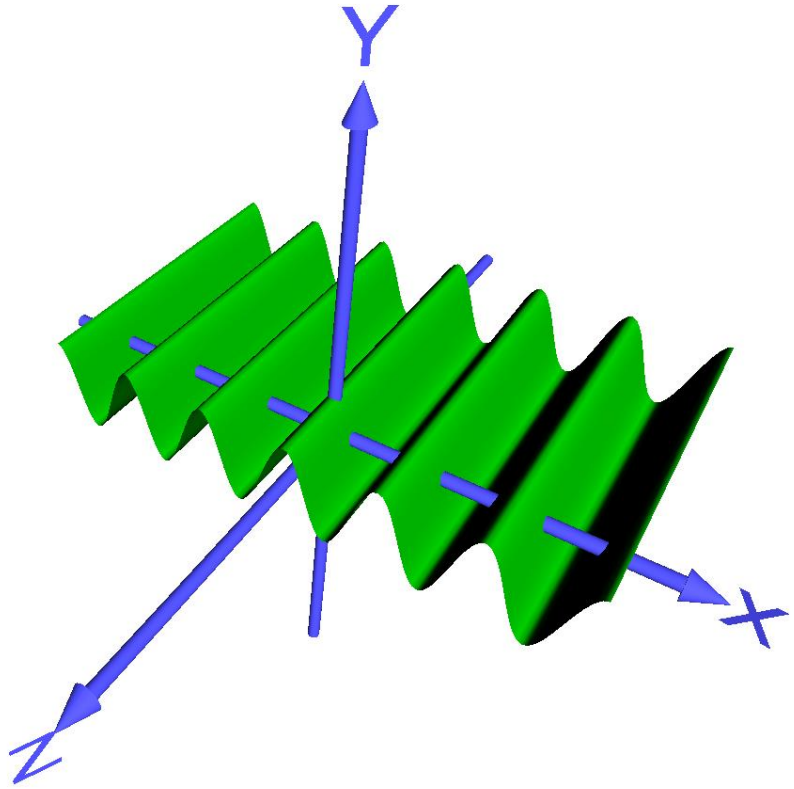


Cylindrical Surface 2 is defined with the same equation as Cylindrical Surface 1 with sampling resolution [40 1].

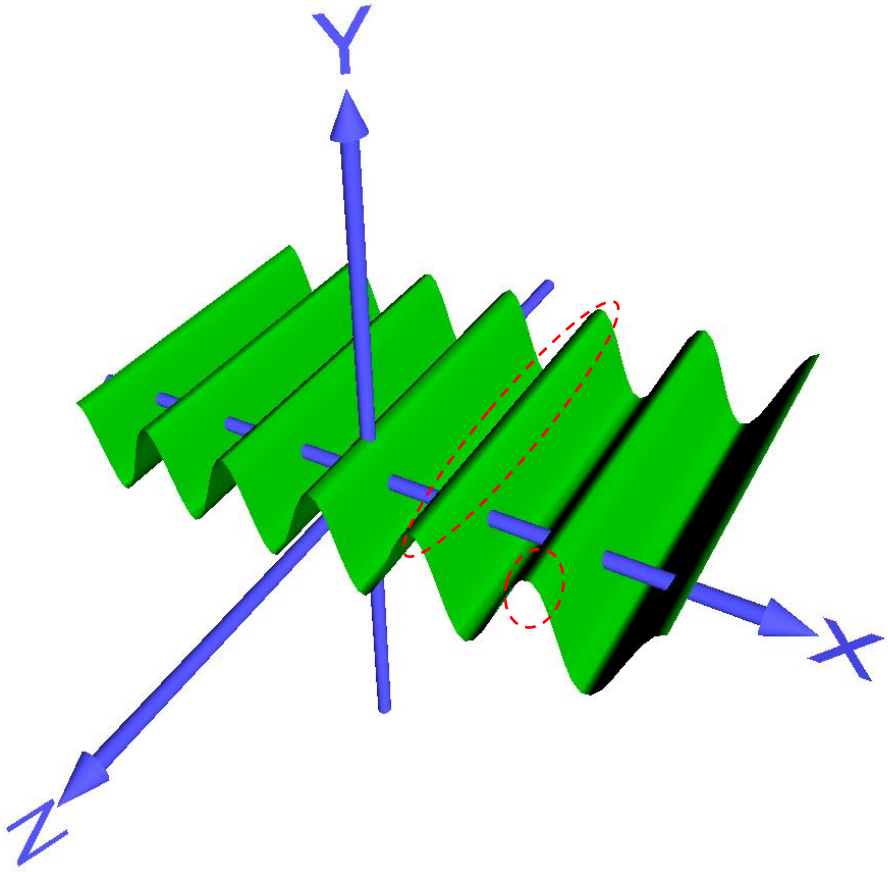
Cylindrical Surface 3



Cylindrical Surface 3 is defined with the same equation as Cylindrical Surface 1 with sampling resolution [60 10].

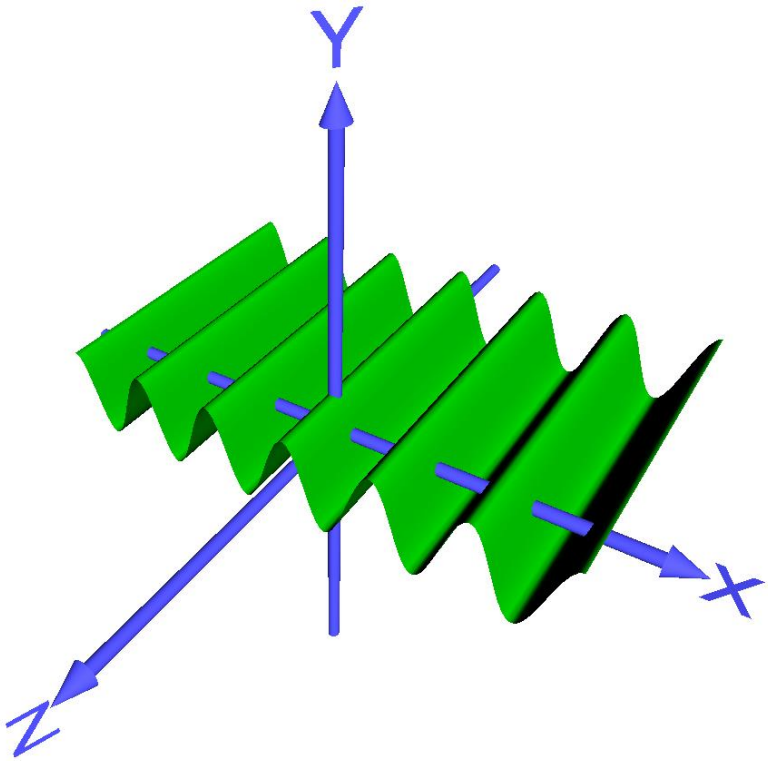
	Note
	In Cylindrical Surface 2, the sampling resolution in parameter u is reduce to 40. As shown, when the sampling resolution is reduced, line starts to form on the surface of the cylindrical. In Cylindrical Surface 3, the sampling resolution in parameter v is increase to 10. Since the z axis is like a curve plane, increasing the resolution will not affect the curve. Thus, the minimum sampling resolution for Cylindrical Surface is [60 1].
Q2	Cosine Surface 1
	
	Name of the file: Q2.wrl
	The equation is defined as: x=(-6)+u*(6-(-6)) y=cos(u*12*pi) z=(-6)+v*(2-(-6)) with u as the parameter domain [0, 1], v as the parameter domain [0, 1] and minimum sampling resolution set to [120 1].

Cosine Surface 2



Cosine Surface 2 is defined with the same equation as Cosine Surface 1 with sampling resolution [80 1].

Cosine Surface 3



Cosine Surface 3 is defined with the same equation as Cosine Surface 1 with sampling resolution [120 10].

Note

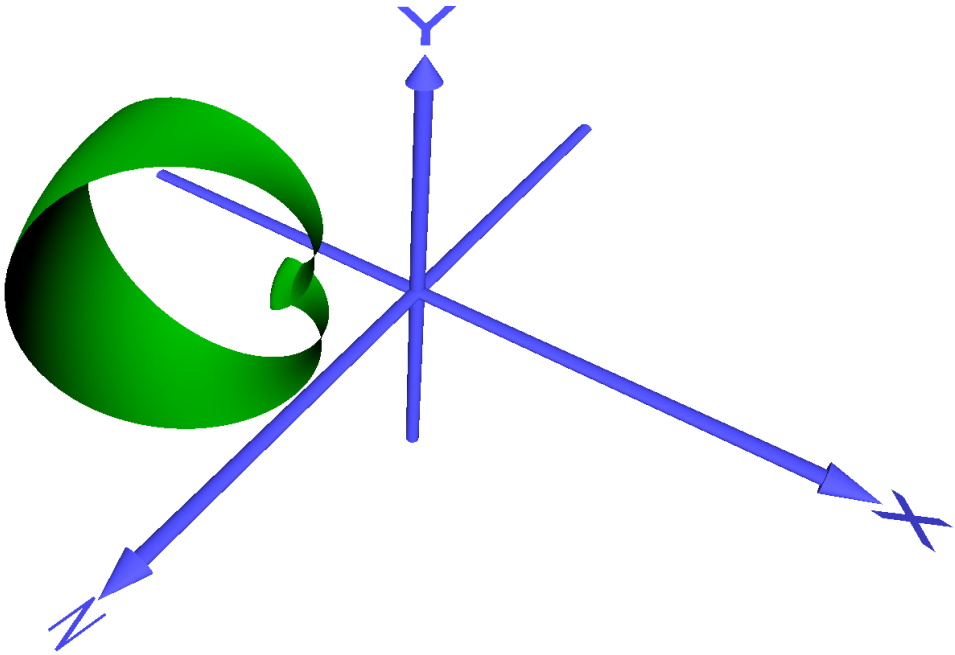
In Cosine Surface 2, the sampling resolution in parameter u is reduced to 80. As shown, the curve from the consine curve turn to line.

Since the cosine surface curve is on the z axis, when changing the sample resolution in parameter of v to 10 as shown on Cosine Surface 3. Notice there is no change to the consine surface.

In conclusion, the minimum sampling resolution of the consine surface is [120 1].

Q3

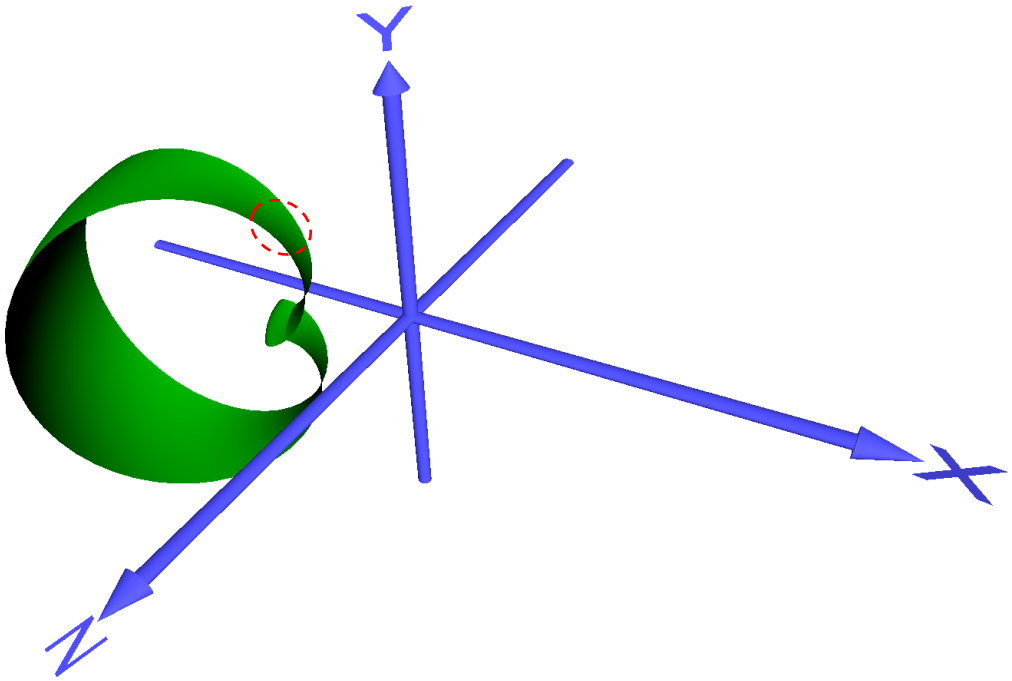
Limaçon Rotational Sweeping 1



Name of the file: Q3.wrl

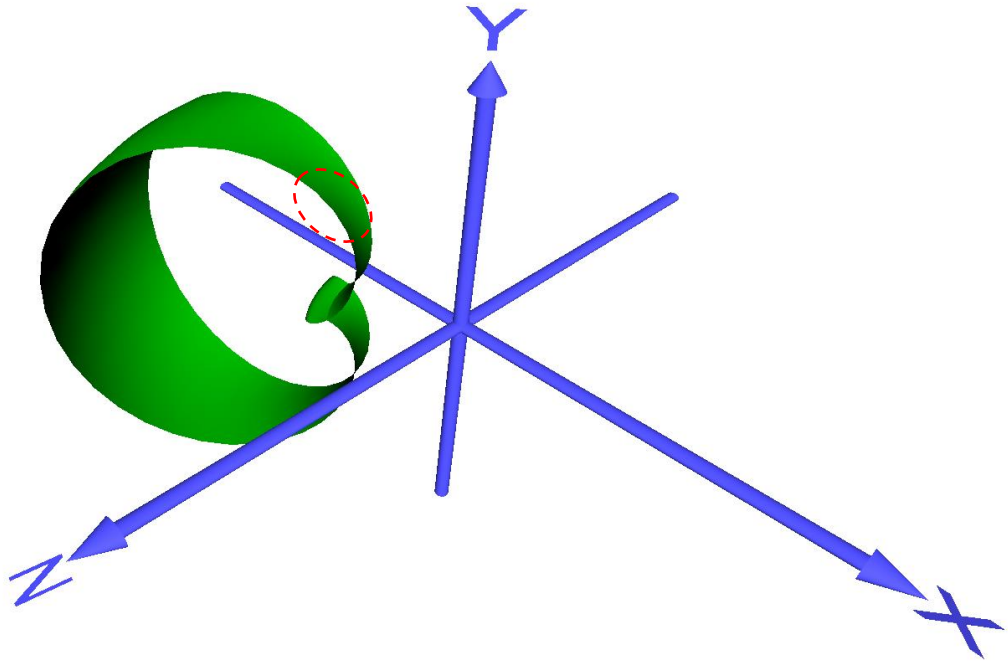
The equation is defined as:
x=((6-1*(7*(cos(u*2*pi))))*(cos(u*2*pi))-6)*sin((3*pi/4)-(v*(pi/6)))
y=(6-1*(7*(cos(u*2*pi))))*(sin(u*2*pi))
z=((6-1*(7*(cos(u*2*pi))))*cos(u*2*pi)-6)*cos((3*pi/4)-(v*(pi/6)))
with u as the parameter domain [0, 1], v as the parameter domain [0, 1] and minimum sampling resolution set to [100 10].

Limaçon Rotational Sweeping 2



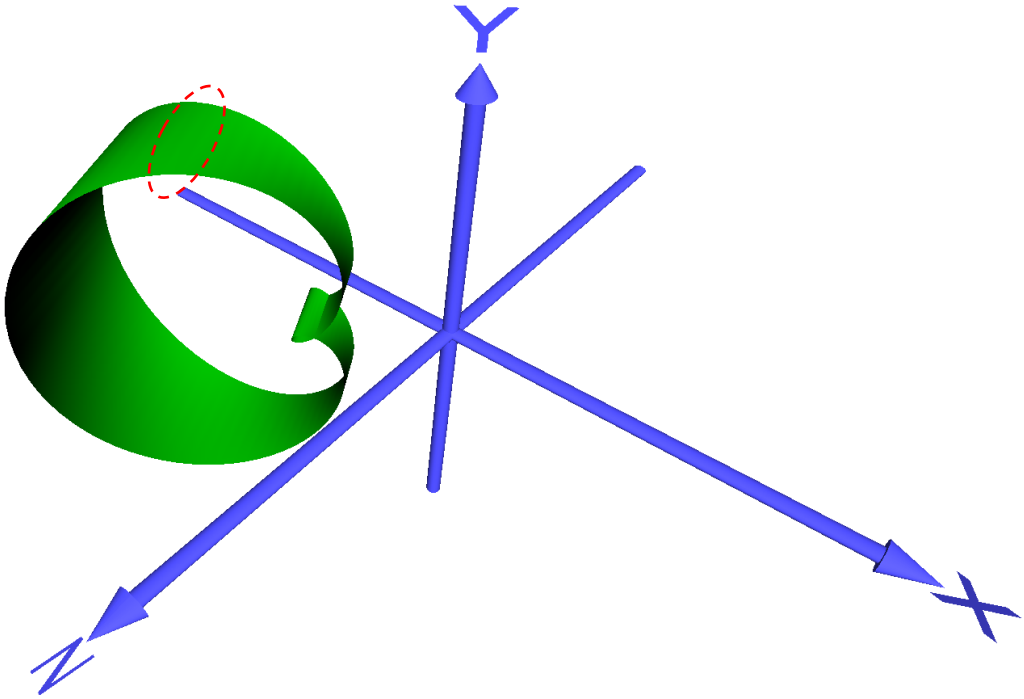
Limaçon Rotational Sweeping 2 is defined with the same equation as Limaçon Rotational Sweeping 1 with sampling resolution [70 10].

Limaçon Rotational Sweeping 3



Limaçon Rotational Sweeping 3 is defined with the same equation as Limaçon Rotational Sweeping 1 with sampling resolution [50 10].

Limaçon Rotational Sweeping 4



Limaçon Rotational Sweeping 4 is defined with the same equation as Limaçon Rotational Sweeping 1 with sampling resolution [100 1].

Note

In Limaçon Rotational Sweeping 2 and 3, notice when the sampling resolution in parameter u are reduce to around 50 and 70. Line are form on the limaçon curve.

In Limaçon Rotational Sweeping 4, when the sampling resolution in parameter v is reduce to 1. Notice the lines are form on the surface of the limaçon.

Therefore, the minimum sampling resolution for limaçon rotational sweeping is [100 10].