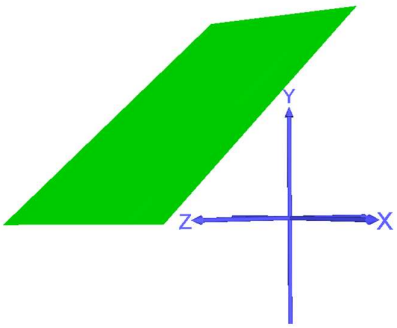
CZ2003: Lab 2

Name: Neo Rui Xuan Berlynn	**Last two digits of the matric card:** 1 and 2

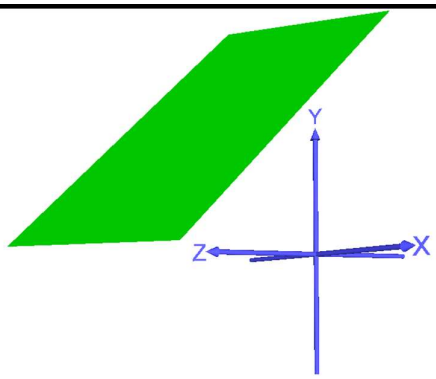
Q1a



$$x = 1 - u$$
$$y = 2 - 2 * v$$
$$z = u + 2 * v$$
$$u, v \in [0,1]$$

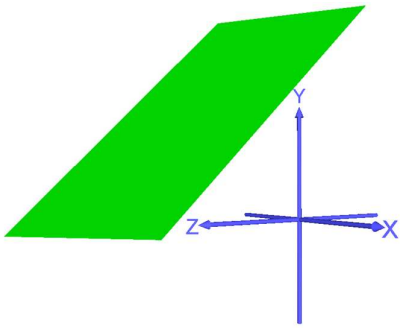
The sampling resolution here is [75 75].

Name of the file: Lab2_Qn1_a.wrl



Name of the file: Lab2_Qn1_a_SmallR.wrl

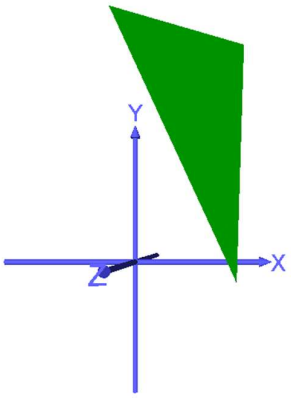
The sampling resolution here is lower at [1 1]. There is no change observed as this plane only consists of 1 surface and requires just 1 surface to form, thus having resolution at 1 is sufficient.



Name of the file: Lab2_Qn1_a_BigR.wrl

The sampling resolution here is higher at [200 200]. As explained above, there would be no change observed in the plane as only 1 surface is required to form this plane.

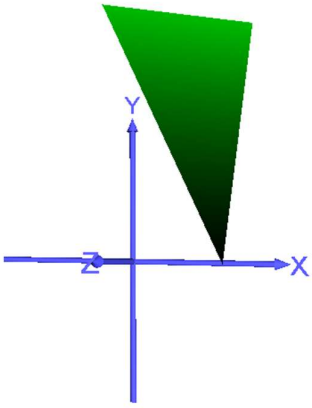
Q1b



$$x = 1 - u + u * v$$
$$y = 2 - 2 * v$$
$$z = u + 2 * v - u * v$$
$$u, v \in [0,1]$$

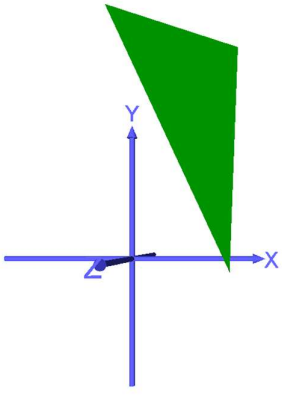
The sampling resolution here is [75 75].

Name of the file: Lab2_Qn1_b.wrl



Name of the file: Lab2_Qn1_b_SmallR.wrl

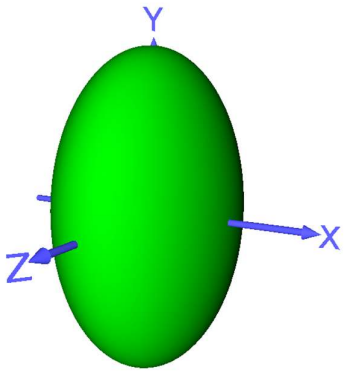
The sampling resolution here is lower at [1 1]. There is a gradient effect, but no change in the shape observed as only 1 surface is required to form this flat surface.



Name of the file: Lab2_Qn1_b_BigR.wrl

The sampling resolution here is higher at [150 150]. As explained above, there is no change observed as only 1 surface is required to form this flat surface.

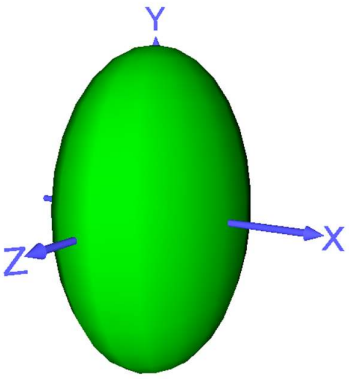
Q1c



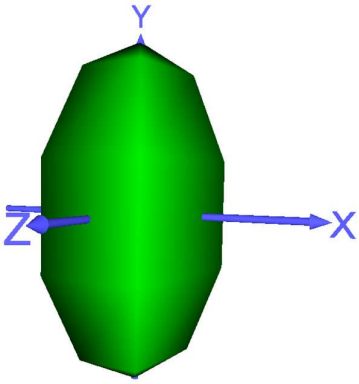
$$x = \cos(\pi u - 0.5\pi)\sin(2\pi v - \pi)$$
$$y = 2\sin(\pi u - 0.5\pi)$$
$$z = 1.5\cos(\pi u - 0.5\pi)\cos(2\pi v - \pi)$$
$$u, v \in [0,1]$$

The sampling resolution here is [75 75].

Name of the file: Lab2_Qn1_c.wrl

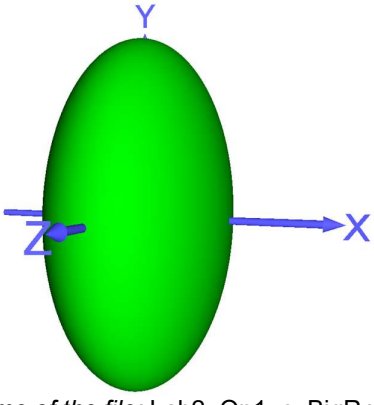


Name of the file: Lab2_Qn1_c_SmallR1.wrl



Name of the file: Lab2_Qn1_c_SmallR2.wrl

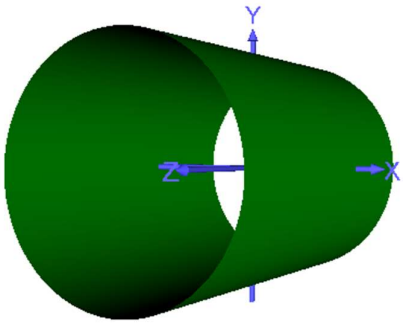
The sampling resolution on the left (Rsmall1_Lab2_Qn1_c.wrl) is [15 15]. If the sampling resolution is decreased further to [5 5] as seen on the right (Rsmall2_Lab2_Qn1_c.wrl), the ellipsoid will appear more jagged as it will be made up of lesser, bigger surfaces.



Name of the file: Lab2_Qn1_c_BigR.wrl

The sampling resolution here is [200 200]. It appears smoother than those with lower sampling resolutions as more smaller surfaces are used to form the ellipsoid here.

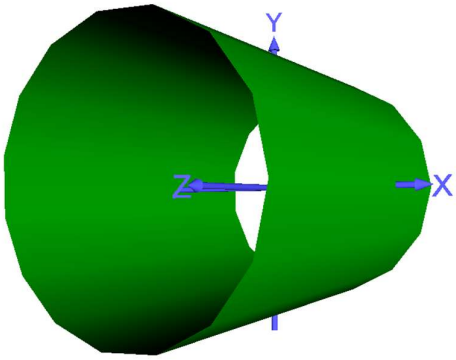
Q1d



$$x = \cos(2\pi u)$$
$$y = \sin(2\pi u)$$
$$z = -1 + 3v$$
$$u, v \in [0,1]$$

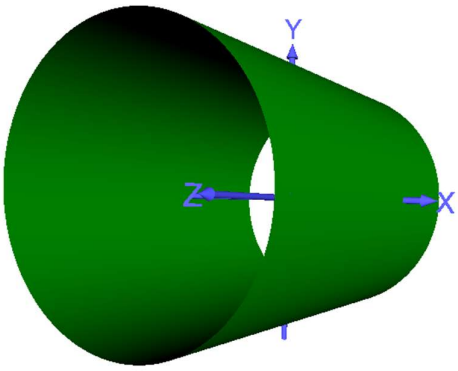
The sampling resolution here is [75 75].

Name of the file: Lab2_Qn1_d.wrl



Name of the file: Lab2_Qn1_d_SmallR.wrl

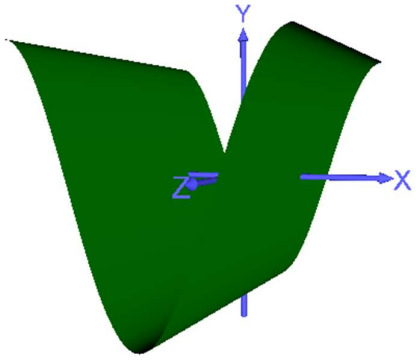
The sampling resolution here is lower at [15 15]. It appears more jagged as less surfaces are used to form this tube. As the sampling resolution is decreased further, the polygon shape of the tube will have lesser sides, with a sampling resolution of [3 3] forming a triangular tube (3 sides).



Name of the file: Lab2_Qn1_d_BigR.wrl

The sampling resolution here is higher at [150 150]. It appears smoother than those with lower resolutions as more smaller surfaces are used to form the tube, making the lines made by each surface appear less obvious and making the tube smoother.

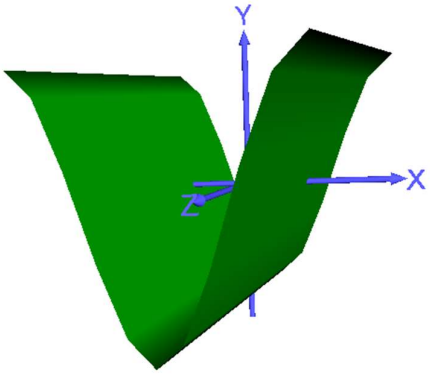
Q2



$$x = -1 + 2u$$
$$y = \cos(2\pi u)$$
$$z = -1 + 3v$$
$$u, v \in [0,1]$$

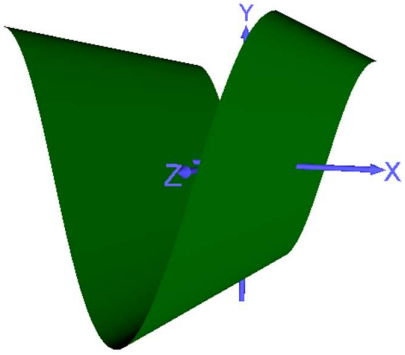
The sampling resolution here is [75 75].

Name of the file: Lab2_Qn2.wrl



Name of the file: Lab2_Qn2_SmallR.wrl

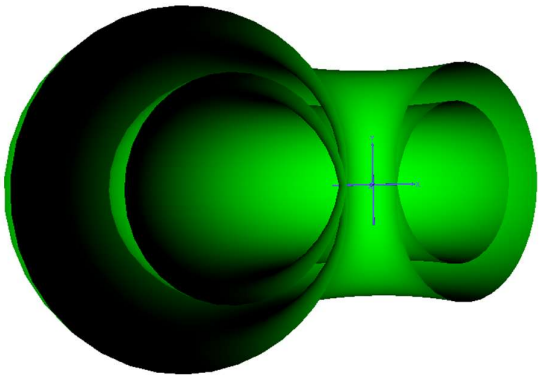
The sampling resolution here is lower at [10 10]. It appears less smooth than the original resolution as lesser surfaces are used to form this, specifically 10 in this case. As the sampling resolution is further decreased, even lesser surfaces are used to form the graph until a straight line is obtained when sampling resolution is [1 1].



Name of the file: Lab2_Qn2_BigR.wrl

The sampling resolution here is higher at [150 150]. It appears much smoother than lower resolutions as more surfaces are used to form the graph.

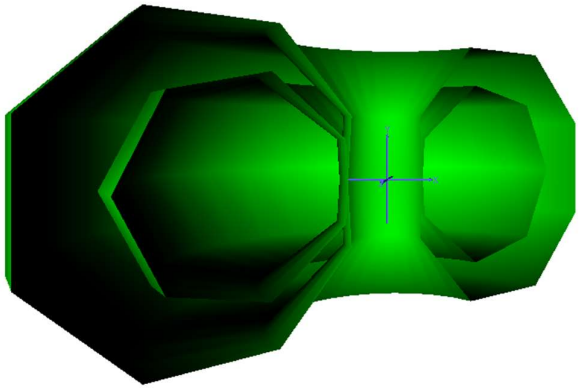
Q3



$$x = ((1 - 7\cos(2\pi u)) * \cos(2\pi u) - 1) * \sin(-v\pi + 0.75\pi)$$
$$y = (1 - 7\cos(2\pi u)) * \sin(2\pi u)$$
$$z = \left((1 - 7\cos(2\pi u)) * \cos(2\pi u) - 1\right) * \cos(-v\pi + 0.75\pi)$$
$$u, v \in [0,1]$$

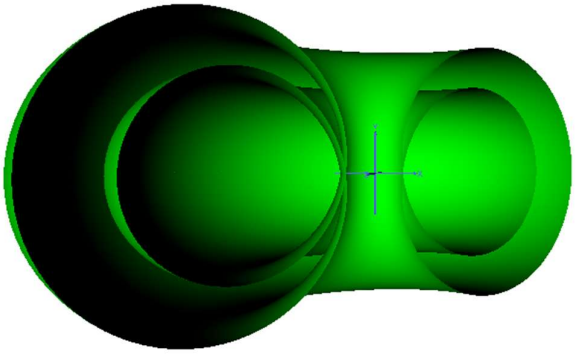
The sampling resolution here is [75 75].

Name of the file: Lab2_Qn3.wrl



Name of the file: Lab2_Qn3_SmallR.wrl

The sampling resolution here is lower at [15 15]. It appears more jagged and like a polygon shaped tube as compared to the original resolution. As the resolution is decreased further, less surfaces are used to form the tube, as a triangular shaped tube is obtained at resolution [3 3] and eventually a flat surface at resolution [2 2].



Name of the file: Lab2_Qn3_BigR.wrl

The sampling resolution here is higher at [150 150]. It appears much smoother compared to lower resolutions as more surfaces are used to form the tube.