***The Graph of y = (-1)x***

***by Philip Lloyd***

If we just choose **INTEGER** values of *x* we just get the ***y values +1 and -1***
eg **(0, 1), (1, *–*1), (2, 1), (3, *–*1) ... and (*–*1, *–*1), (*–*2, 1), (*–*3, *–*1)...**



However, if we choose ***x = 0.1*** *we get* ***y = 0.95 + 0.31i***

***x = 0.6 we get y = –0.31 + 0.95i***

***x = 1.2 we get y = –0.81 – 0.59i***

These points have a **REAL PART** and an **IMAGINARY PART**. In order to make sense of this, we need to be able to plot these ***complex y values*** so we need **another axis** besides the ***normal x and y axes***.

I will use only ***REAL x VALUES*** on the *x axis* and in order to plot points such as ***y = 0.95 + 0.31i*** I will put the **REAL PART** (0.95) on the normal ***y axis***
and the **IMAGINARY PART** (0.31*i*) on the ***z axis (imaginary y axis)***, using **Autograph**.

The DOMAIN of this graph is all the real numbers (ie on the real *x* axis).
But instead of a simple ***y AXIS*** we now have a ***complex*** ***y PLANE*.**
**I plotted several POINTS in this way eg *(0.5,  0 + i) and ( 0.8, – .81 + .59i)***
***and produced the following graph:***



***By joining these points we produce this beautiful helix.***



End view:



***Auckland, February 2016***