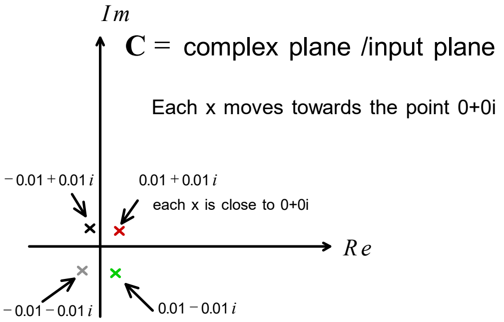
Note: The color coding is meaningful. Follow the colored x's carefully.



$\mathbf{C}$ = complex plane/ output plane for $f(z)=\frac{1}{z}$ where z ∈ $\mathbf{C}$

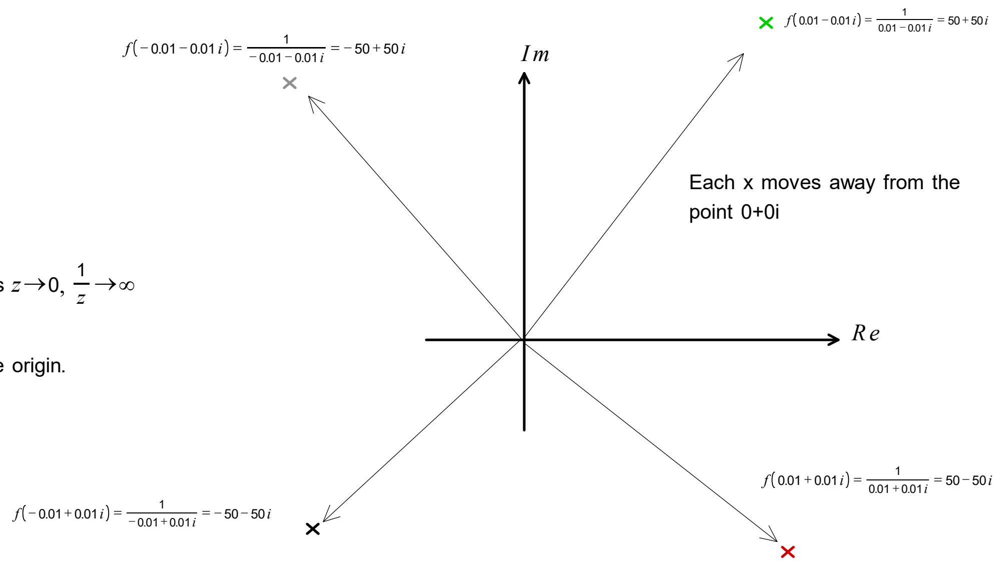
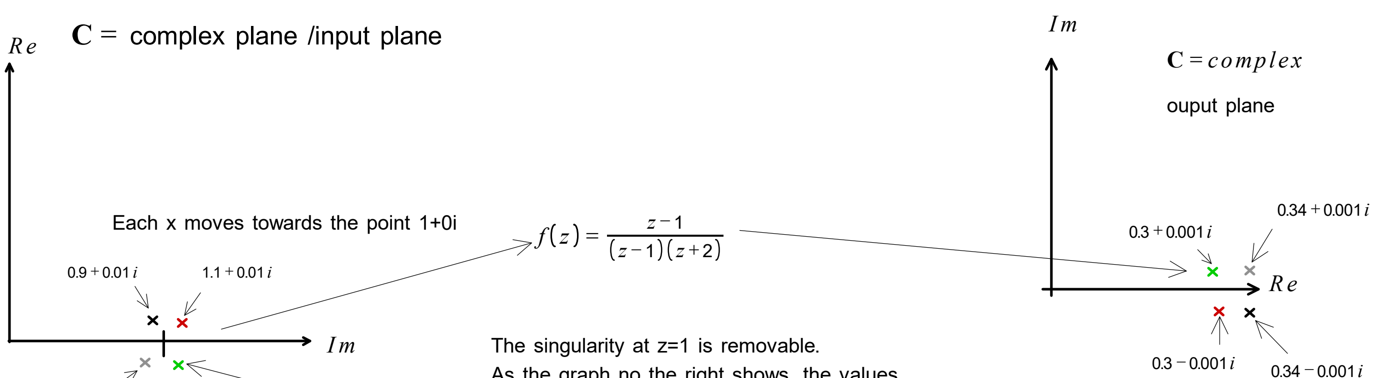


Illustration of an essential singularity. As z→0, $\frac{1}{z}\to\infty$

As $z\to 0$, $\frac{1}{z}\to\infty$

In other words, $\frac{1}{z}$ shoots away from the origin.

So z=0 is an essential singularity. So



$z=1$ is a removable singularity.

The singularity at z=1 is removable.
As the graph no the right shows, the values around z=1 , from the left graph, are mapped in such a way that they stay closely together.
The effect of the $\frac{z-1}{z-1}$ in $\frac{z-1}{(z-1)(z+2)}$ is to make the values stable around z=1.

We can see the output points are moving towards a certain value. Thus the singularirty that arises from the presence of z-1 can be removed simply by redefining the value of the function to be equal to the limit that f(z) approaches as z→1.