

Sketch of $\zeta(1 + it)$ for $0 < t \leq 36$

We pause here for a sketch. Of course, it is impossible to give a satisfactory representation of a complex-valued function in a single sketch. But it can be quite illuminating to sketch the curve in the complex plane described by $f(s)$ when s moves along a chosen line. For the zeta function, an interesting choice is the vertical line $s = 1 + it$. The sketch shows the curve traced out by $\zeta(1 + it)$ for $0 < t \leq 36$. It comprises a succession of clockwise loops of varying sizes, with none of the regularity displayed by the more familiar "standard" functions.

