# Complex Dynamics (M16)

## Holly Krieger

This course will introduce the study of iteration of rational functions of one complex variable. We will cover the local theory and the global theory, and introduce key modern ideas in the field to form a basis for further study.

#### Pre-requisites

Essential: IB Complex Analysis, IB Analysis and Topology.

Helpful: IB Geometry, II Algebraic Topology, II Dynamical Systems.

#### Literature

Milnor is the primary resource, though there will be some departure in presentation and material, particularly towards the end of the course.

1. J. Milnor *Dynamics in One Complex Variable*. Any version is fine, including the early online version available on the arXiv:

https://arxiv.org/pdf/math/9201272.pdf

Additional resources for students seeking more detailed or more accessible presentations of mostly the same material:

- 2. A. Beardon, Iteration of Rational Functions. Springer, 1991.
- 3. L. Carleson, T. W. Gamelin, Complex Dynamics. Springer, 1993.

### Additional support

Three examples sheets will be provided and three associated examples classes will be given. There will be a one-hour revision class in the Easter Term. The lecturer may be contacted by email at

#### hkrieger@dpmms.cam.ac.uk.

Please note that this course will differ in substantive ways from the Lent 2020 Complex Dynamics course. In particular, this course does *not* require Riemann surfaces as a pre-requisite, and will not include the study of quasiconformal maps.