Homerton College
Jonathan Beswick Memorial Prize for Mathematics 2023-24

Jonathan Beswick was a Homerton undergraduate student who died in 1995 during his third year. This prize was established to remember his enthusiasm and talent for mathematics.

The prize is awarded for an essay on a mathematical topic. The topics for the current academic year are:

1. *The twin prime conjecture. Discuss the history of the conjecture and related results and work inspired by it.*

2. *Discuss the mathematical work of a Fields Medallist of your choice.*

3. *P versus NP. Discuss the history of this problem and try to explain why attempts to solve it have failed thus far.*

4. *Approximation theory for real valued functions. The essay might include some subset of: basics of polynomial interpolation, the Weierstrass approximation theorem, the best approximation problem, approximation in L^1 vs L^2.*

5. *Fredholm Theory and linear integral equations. Discuss basics of theory and applications to Sturm-Liouville eigenvalue problems over finite intervals.*

6. *Chaos in dynamical systems. Discuss chaotic properties of logistic map.*

Students are asked to choose **one** topic from the list above. The essays are expected to be in the region of 3000 words and be word processed (ideally LaTeX-ed). Questions about essays 1-3 should be directed to Dr Simon Wadsley (sjw47) and questions about 4-6 to Dr Anthony Ashton (acla2).

The completed essay and accompanying cover sheet (attached) should be submitted to the Tutorial Office by the closing date. Any undergraduate student at Homerton College, in the first three years of their course, may enter provided they have not won the prize in any previous year. The value of the prize is £100.

Closing date: 5pm on Monday 12th February 2024.
Your essay and cover sheet may be submitted in person to the Tutorial Office or sent via tutorial@homerton.cam.ac.uk.

Jonathan Beswick Memorial Prize for Mathematics

COVER SHEET

Name (please print):

Essay Title:

I confirm that this is my own original work and does not contain material which I have already used to any substantial extent for a comparable purpose.

Signed:

Date: