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*An Algorithm for Numerically Computing Preimages of the
 j -invariant*

Ethan Alwaise
Emory University

Abstract: Here we explore the problem of numerically computing preimages of the j -invariant. We present an algorithm based on studying the asymptotics of the Fourier coefficients of the logarithmic derivative of $j(\tau)$. We use recent work of Bringmann et al., which gives asymptotics for the Fourier coefficients of divisor modular forms, to identify the real and imaginary parts of the preimage.

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Advisor: Ken Ono

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