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Adam C. McDougall* (mcdougal@stolaf.edu) and **Nathan Bishop** (bishop@stolaf.edu).

Rational Density. Preliminary report.

Inspired by the question, “how would one pick a rational number at random?”, we use what’s known about natural density (asymptotic density of the natural numbers) and its generalizations to define ‘rational density’ (asymptotic density of the rational numbers).

Directly computing the rational density of a set is quite difficult because it necessarily involves infinite sums of the Euler totient function. Instead, we use a correspondence theorem to compute densities and attain some satisfying results. (Received September 20, 2011)