MATH 113: DISCRETE STRUCTURES
HOMEWORK FOR FRIDAY WEEK 13

Problem 1. Let n be a natural number and consider the quantity

$$\psi(n) = \sum_{d|n} \phi(d)$$

which is the sum of the values $\phi(d)$ where d ranges through all the positive divisors of n. What is $\psi(n)$? (Experiment, formulate a conjecture, and prove it. *Hint*: Consider the fractions $\frac{1}{n}, \frac{2}{n}, \ldots, \frac{n}{n}$.)