Exercise 1. Verify that equation (5) of Theorem 3.1 is true when \([y] + 2 > [x]\) (this case is not handled by the proof given in the text).

Exercise 2. Given an integer \(k \geq 1\) find an asymptotic formula for

\[
\sum_{\substack{n \leq x \\ (n, k) = 1}} \frac{1}{n}
\]

with an error term that tends to 0 as \(x \to \infty\).