Let a_i, b_i be coprime positive integers for $i = 1, 2, \ldots, k$, . and m the least common multiple of $b_1, \ldots, b_k$. Prove that the greatest common divisor of $a_1\frac{m}{b_1}, \ldots, a_k\frac{m}{b_k}$ equals the greatest common divisor of $a_1, \ldots, a_k$

设 a_i, b_i 是两两互质的正整数，其中 $i = 1, 2, \ldots, k$，设 m 为 $b_1, \ldots, b_k$ 的最小公倍数。证明：$a_1\frac{m}{b_1}, \ldots, a_k\frac{m}{b_k}$ 的最大公约数等于 $a_1, \ldots, a_k$ 的最大公约数。

Let $x_0 = 5$ and $x_{n+1} = x_n + \frac{1}{x_n}$ $(n = 0, 1, 2, \ldots)$. Prove that $45 < x_{1000} < 45.1$

设 $x_0 = 5$，且 $x_{n+1} = x_n + \frac{1}{x_n}$ $(n = 0, 1, 2, \ldots)$。证明：$45 < x_{1000} < 45.1$。