Problems to think about (Chapter 1)

1. Show that $1 + \frac{1}{3} + \frac{1}{5} + \cdots + \frac{1}{2n+1}$ is not an integer for $n \geq 1$.

2. Find an upper bound for $q_n = n^{th}$ smallest prime of the form $4n + 3$.

3. Find a lower bound for $\pi'(x) = \text{number of primes of the form } 4n + 3 \text{ that are } \leq x$. 