Let $f(x) = \begin{cases} 1 & \text{if } x \text{ is rational} \\ 0 & \text{if } x \text{ is irrational} \end{cases}$

Let $P = \{x_0 < x_1 < x_2 < \ldots < x_N\}$

where $x_0 = a$ and $x_N = b$.

For each interval ~~fbn~~

(x_j, x_{j+1}), what is M_j, and what is m_j?

What is $\displaystyle\sum_{j=0}^{N-1} (x_j - x_{j-1})$?

(telescoping).

What is $U(f, P)$? and

what is $L(f, P)$?