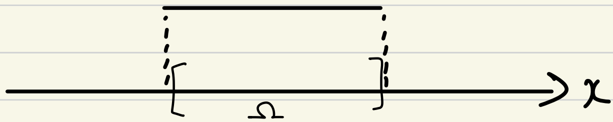
Ex 2.3.2



Ω is L.m. $\quad \chi_\Omega := \begin{cases} 1 & (x \in \Omega) \\ 0 & (x \notin \Omega) \end{cases}$

we think the set of $A \subset \mathbb{R}$, $\forall s \in \mathbb{R}$

such that $x \in A$ satisfies $f(x) > s$

(1) If we set $s > 1$,

$A = \emptyset$

$\therefore m^*(A) = 0$

According to 2nd property proved in Ex 2.2.8

A is L.m.

(2) If we set $0 \leq s \leq 1$

$A = \Omega$

Thanks to the condition Ω is L.m.

$\therefore$ A is L.m.

(3) If we set $s < 0$,

$A = \mathbb{R}$ (A is an open set)

$\therefore m^*(A) = \infty$

According to 1st property proved in Ex 2.2.8

A is L.m.

All in all using (1) ~ (3)

we can say that χ_Ω is L.m. function $//$