Exercises - Median spaces, PART II - Indira CHATTERJI

EXERCISE 1

In any metric space (X,d), show that $\forall x,y,z,w \in X$, if $y \in [x,z]$ and $x \in [w,z]$, then $x \in [w,y]$.

EXERCISE 2

Let (X,d) be a median space. For $x,y,z,w \in X$, if $y \in [x,z]$, then

$$[x,w] \cap [z,w] \subseteq [y,w]$$

EXERCISE 3

Let (X,W,μ) be a measured wall space. Show that the collection of disjoint unions $\bigsqcup_{i=1}^{n} W(F_i \mid G_i)$ for $n \in \mathbb{N}$ and F_i, G_i finite non-empty subsets of X, is a ring.

EXERCISE 4

Let (X_1, W_1, μ_1) and (X_2, W_2, μ_2) be two measured wall spaces. Show that the product $X_1 \times X_2$ has a natural structure of measured wall space and that the wall-metric is the sum of the two wall-metrics on X_1 and X_2.

EXERCISE 5 ♡

Describe the median space associated to $\mathbb{R}^2$ with the wall space given by all the walls parallel to n given non-parallel walls. Do the cases $n = 1, 2, 3$.