

$$\begin{array}{ccc}
 (\rho, X) & & X, \phi \\
 & \downarrow & \downarrow \\
 & \phi & X
 \end{array}$$

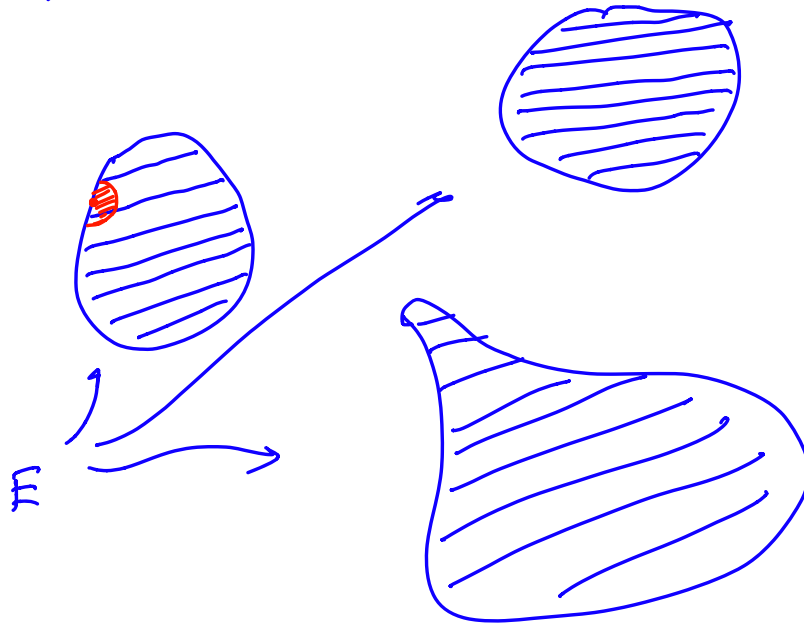
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①  $X = \mathbb{R}^2$ ,  $\rho(x, y) \equiv |x - y|$

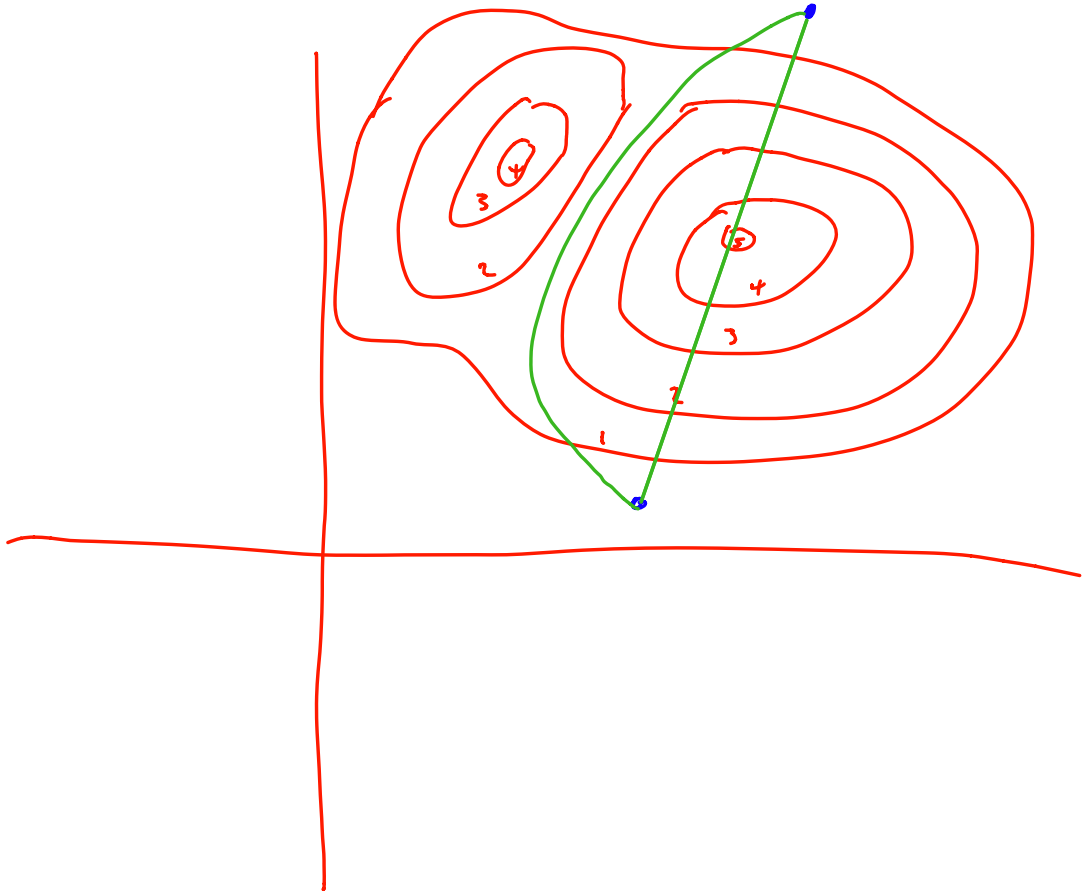
② any subset of  $\mathbb{R}^2$ ,  $E$  with  $\rho \equiv |\cdot|$  will also be a metric space.

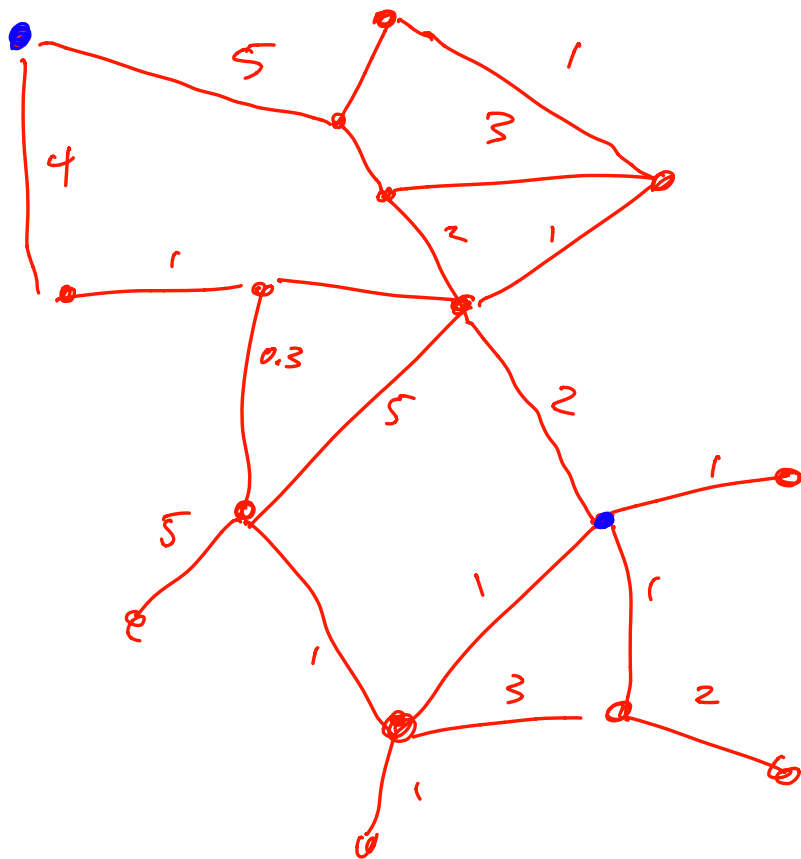
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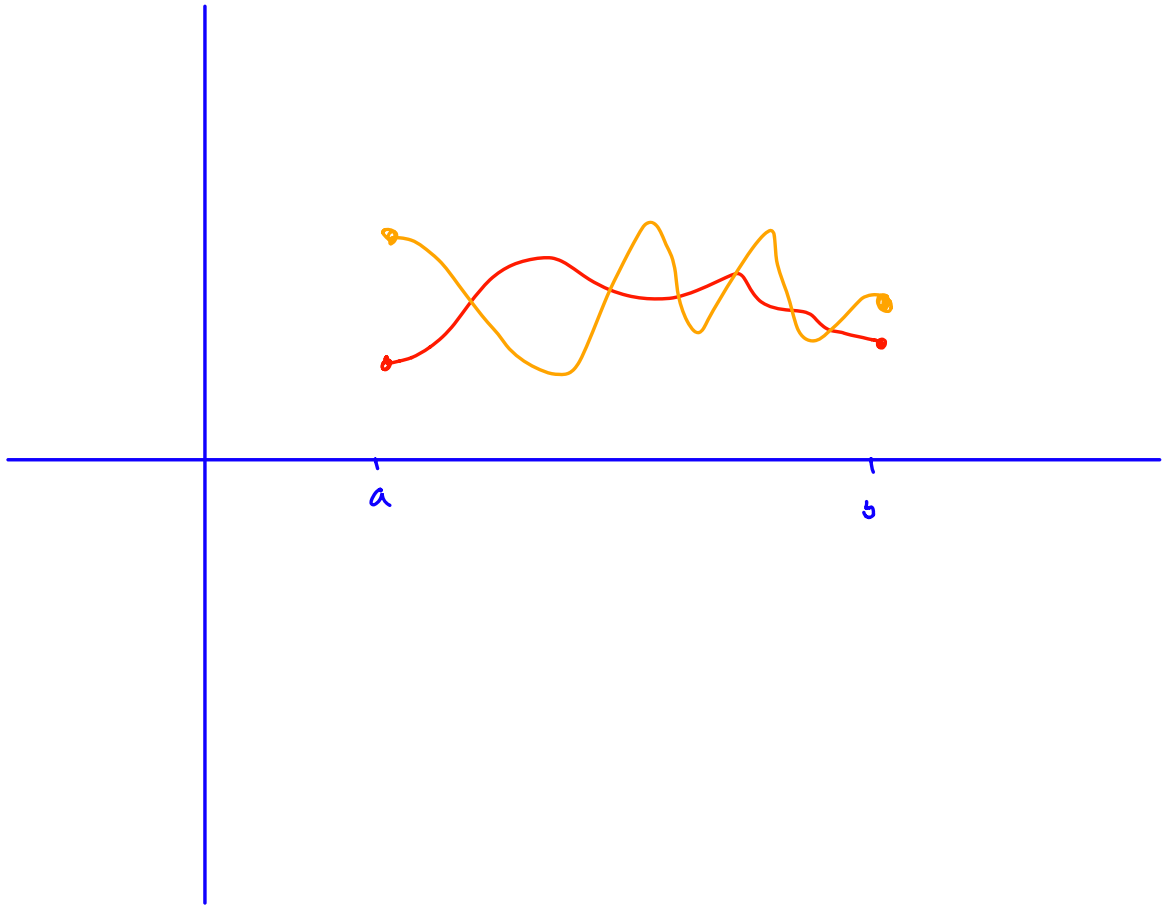
$M(|\cdot|, E)$



$$B(x, \epsilon) \equiv \{y \mid |x - y| < \epsilon\} \rightarrow \text{actually} \\
 \{y \mid |x - y| < \epsilon \text{ and } y \in E\}$$







Topological Spaces can be truly wild