L^2 Norm

Norm: specific choice of $d(\,)$ function.

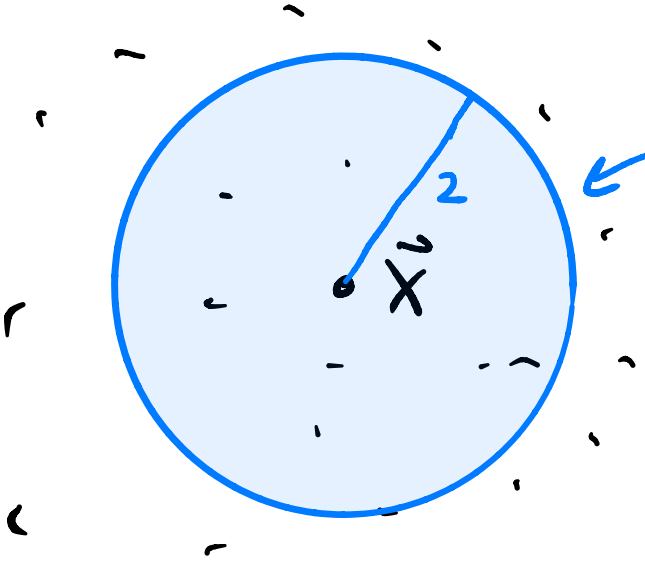
L^2 norm = fancy name for **Euclidean distance**

[we've seen this before — regression]

$$d(\vec{x}, \vec{y}) = \sqrt{\sum_{i=1}^{M} (x_i - y_i)^2} = \|\vec{x} - \vec{y}\|_2$$

"as the crow flies distance"

- L^2 Norm Clustering: Say we consider samples within a radius of 2 from $\vec{x}$ in the same cluster as $\vec{x}$:



← Circular neighborhood

Advantages: Intuitive geometry

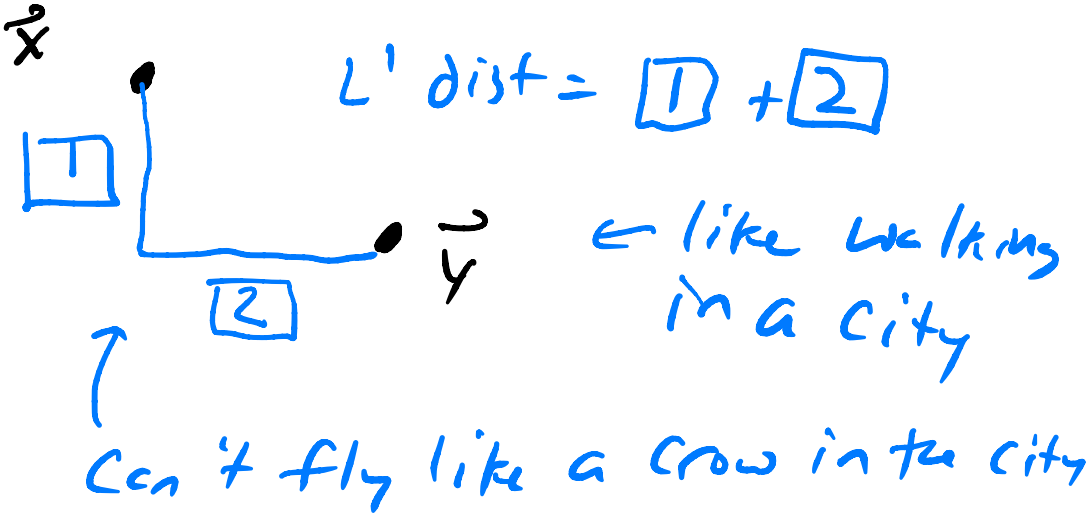
L¹ Norm

"elle one norm"

absolute value Symbol

$$d(\vec{x}, \vec{y}) = \sum_{i=1}^{n} |x_i - y_i| = |\vec{x} - \vec{y}|_1$$

often called **City block distance** or **Manhatten distance**:



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