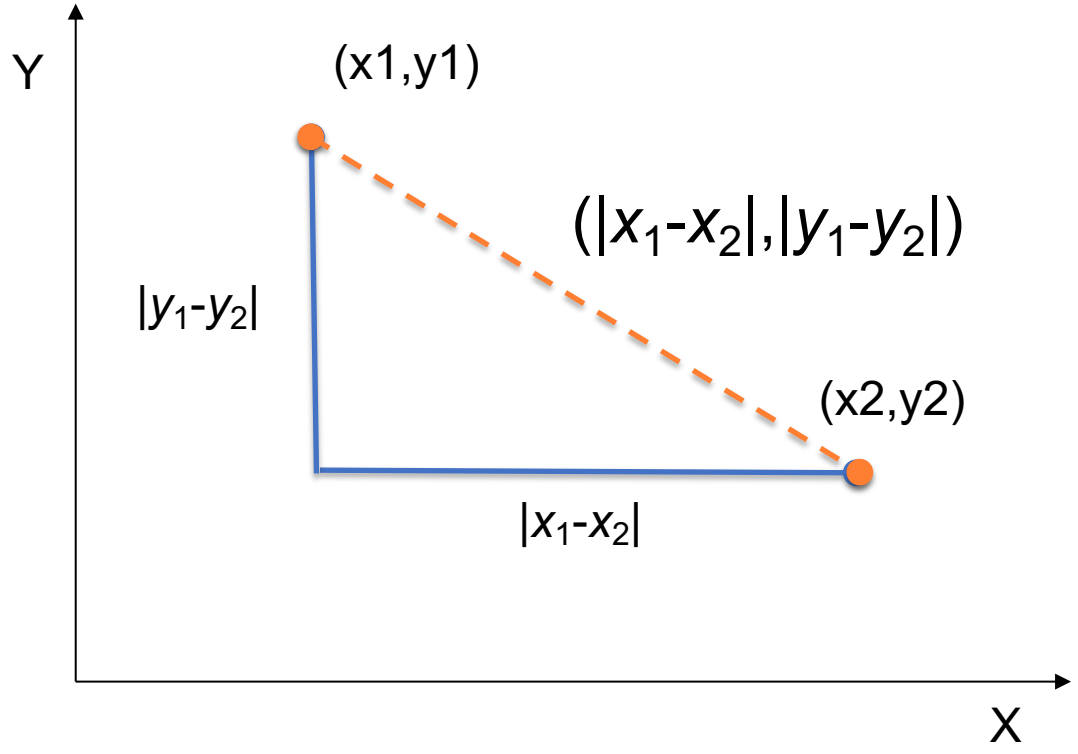
Norms

- Most commonly used family of length measurements are the p-norms

$$\| \vec{\mathbf{v}} \|_{\mathrm{p}} = \left(\sum_{i=1}^{n} |w_i|^p \right)^{\frac{1}{\mathrm{p}}}$$

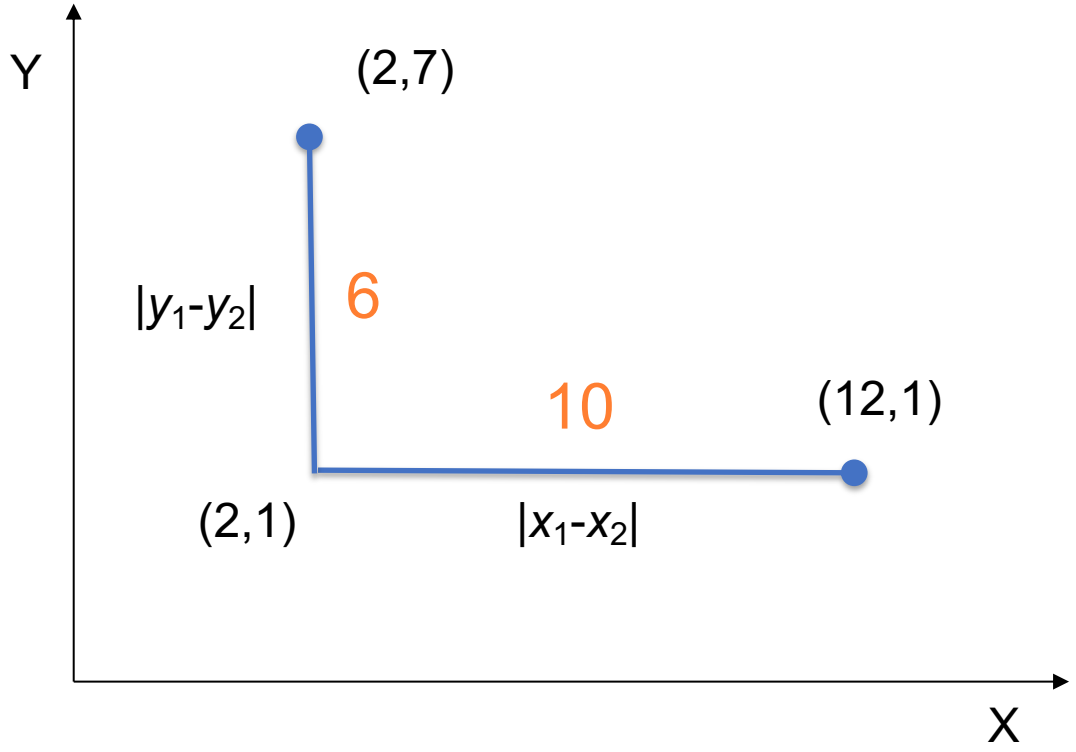
1-norm (Manhattan Distance, L1 distance)



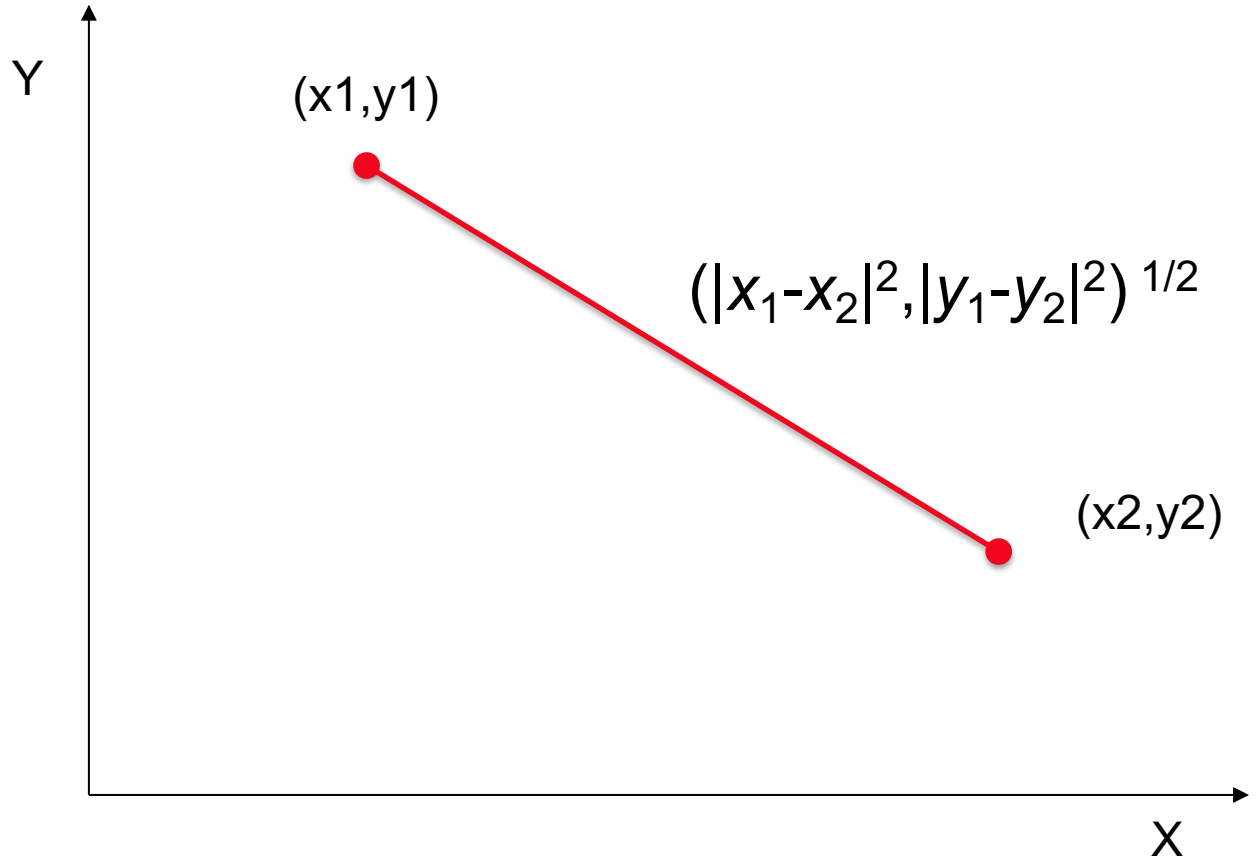
P-Norms

- 1-norm

(6+10)=16



2-norm (Euclidean Distance, L2 distance)

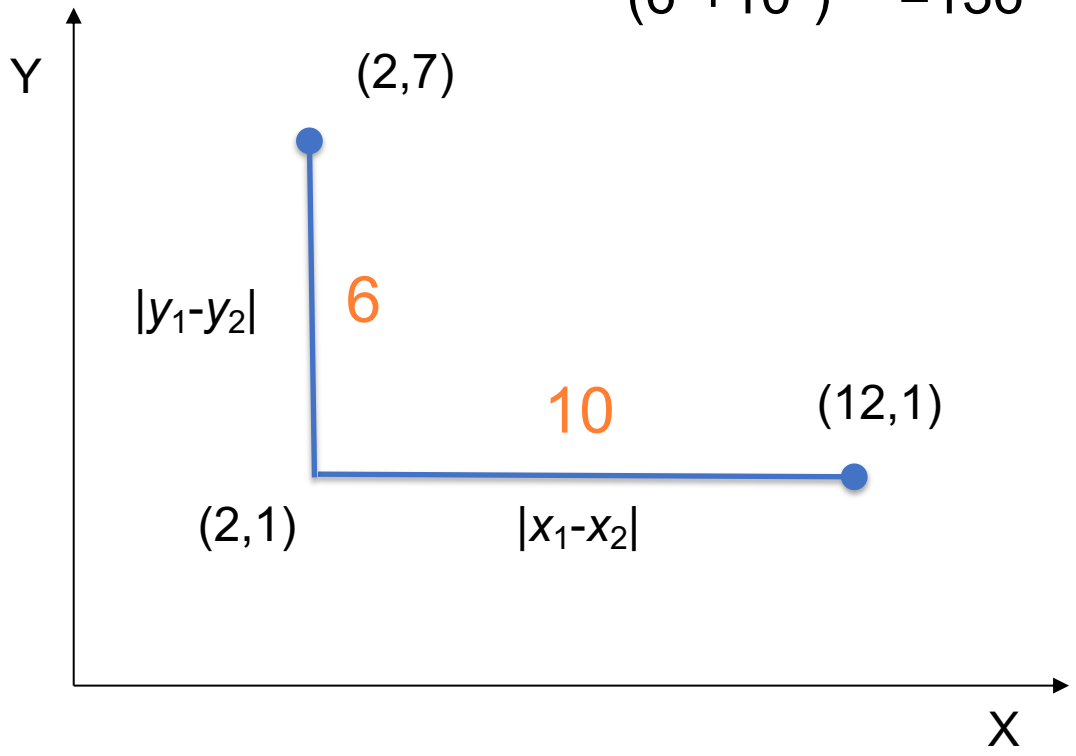


P-Norms

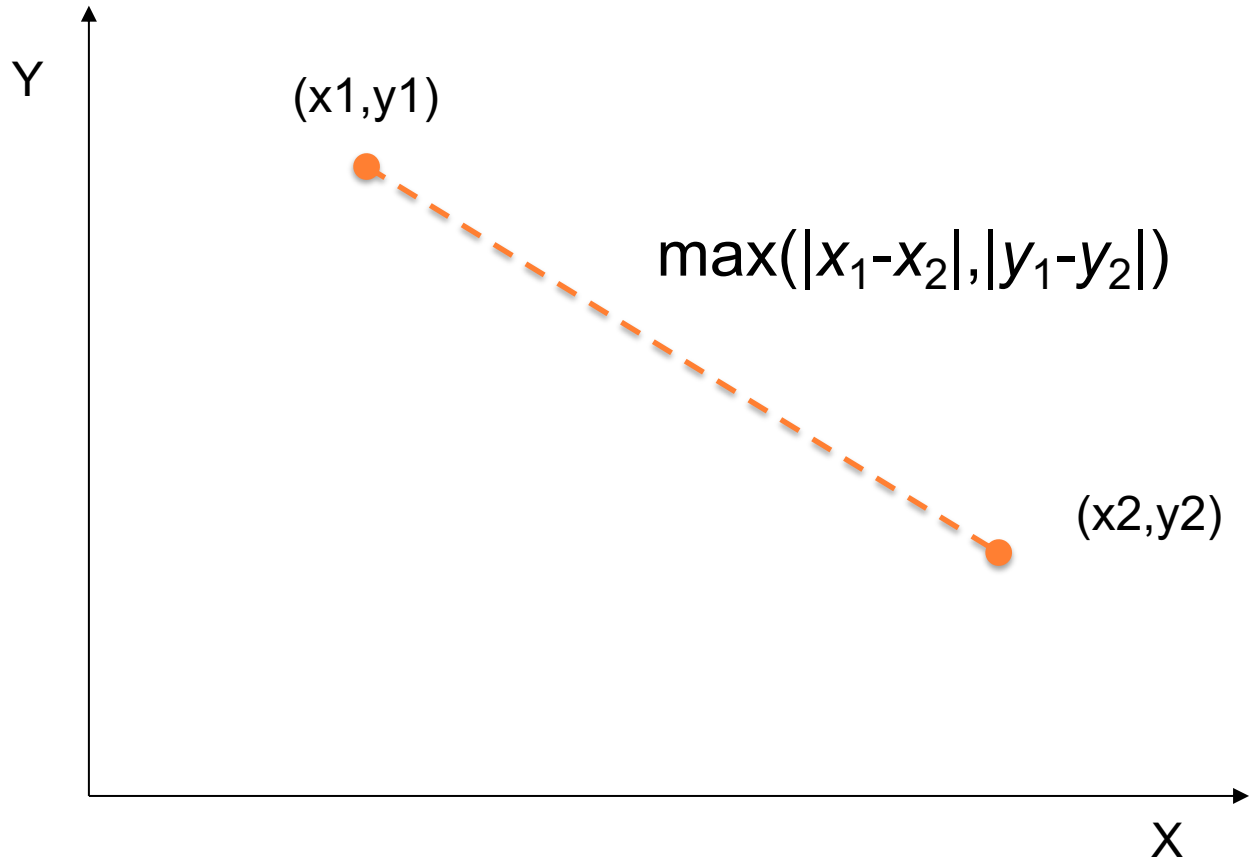
- 1-norm
- 2-norm

$(6+10)=16$

$(6^2+10^2)^{1/2} = 136^{1/2} = 11.66$



∞-norm (L∞ distance)



P-Norms

- 1-norm
- 2-norm
- …
- ∞-norm

$(6+10)=16$

$(6^2+10^2)^{1/2} = 136^{1/2} = 11.66$