Let $p(x), q(x)$

$x \in \mathbb{R}$.

Non Negativity $d(p,q) \geq 0$, $d(p,q) = 0 \Leftrightarrow p = q$

$d(p,q) = d(q,p)$, triangle inequality!

KL divergence

$$-\sum_x p(x) \log q(x) + \sum_x p(x) \log p(x) = D(p\|q)$$

JS divergence $\left(D(p\|q) + D(q\|p)\right)/2 \rightarrow$

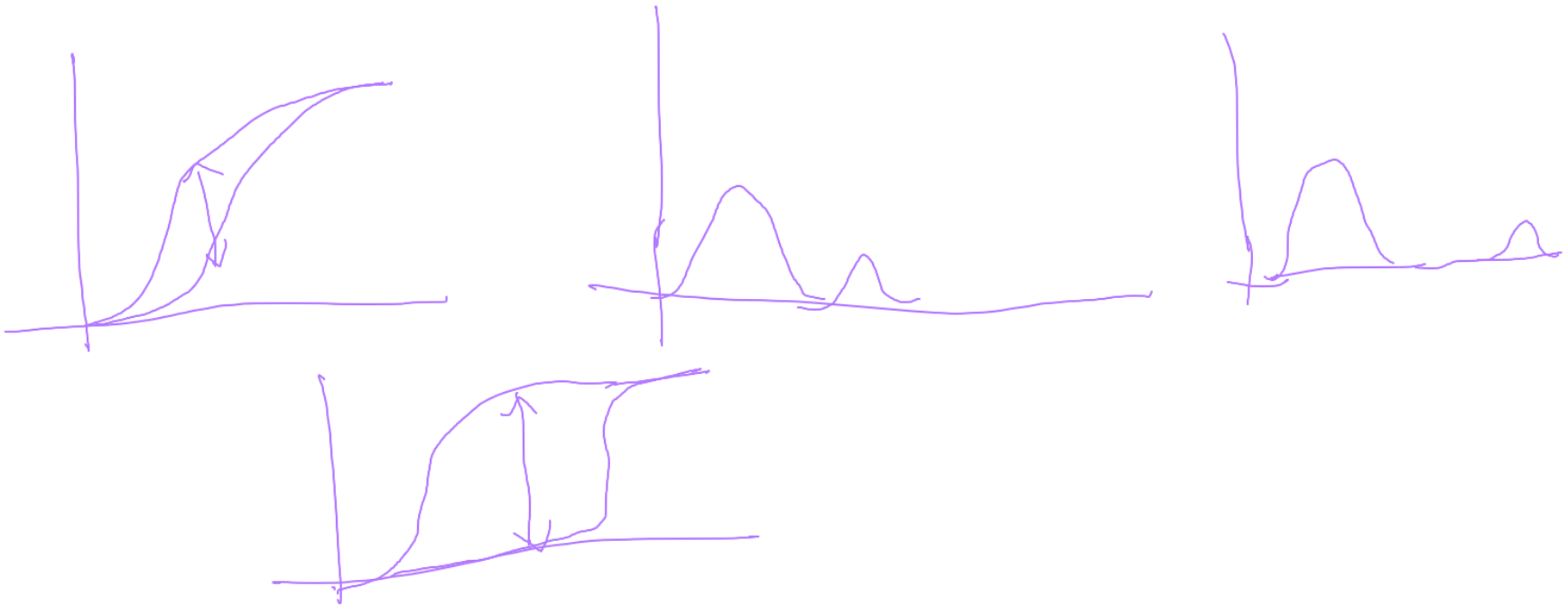
$$D(p_1 + \lambda p_2 \,\|\, q_1 + \lambda q_2) \leq D(p_1 \| q_1) + \lambda (D(p_2 \| q_2))$$

$$D(p_1 p_2 \| q_1) = D(p_1 \| q_1) + D(p_2 \| q_2)$$

K - S Statistics. , P, Q → CDF = P, Q

$$\sup_x |P(x) - Q(x)|$$

L^∞



Wasserstein distance.

$$\int_x |P(x) - Q(x)| \, dx \;=\; L^1$$

$$\downarrow$$

$$L^p = \left(\int_x |P(x) - Q(x)|^n \right)^{1/n}$$

$n = 2$ energy distance

→ Cramer Wolus GAN.

→ P, Q