ground truth
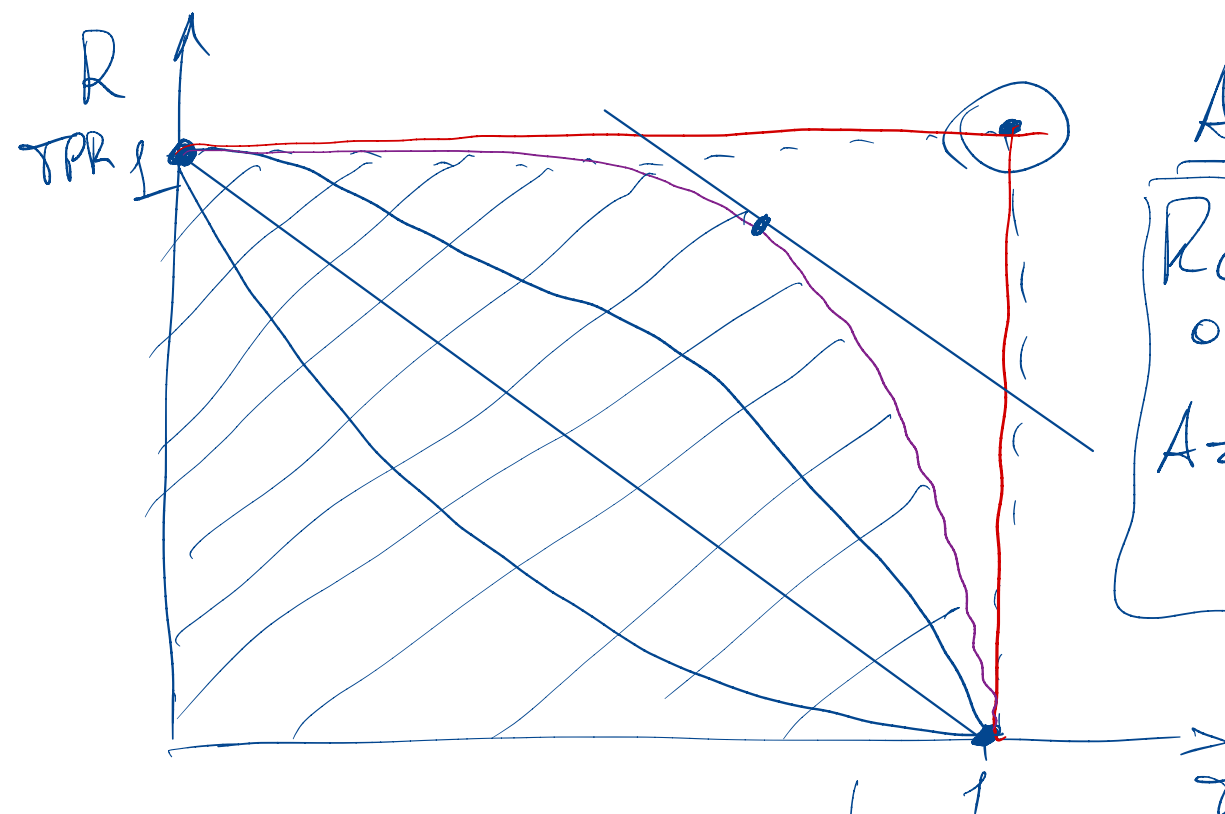
	0	1	
0	TN	FP	995
1	FN	TP	5

$$P = \frac{TP}{TP+FP}$$

$$R = \frac{TP}{TP+FN}$$
TPR

$$TNR = \frac{TN}{TN+FP}$$

R
TPR 1

AUC ROC

Receiver-
operator curve

Area under
the curve

$P \approx 0$ TNR = 0 $P \approx 1$ TNR = 1
       TPR = 1   TPR = 0

TNR

1

TP=0 FP=0
FN=5 TN=995

$$\hat{p} = \sigma(\theta x) \implies \ell$$
$$\vec{\nabla}_\theta \ell$$

$$\theta^{(t+1)} = \theta^{(t)} - \eta \, \nabla_\theta \ell$$