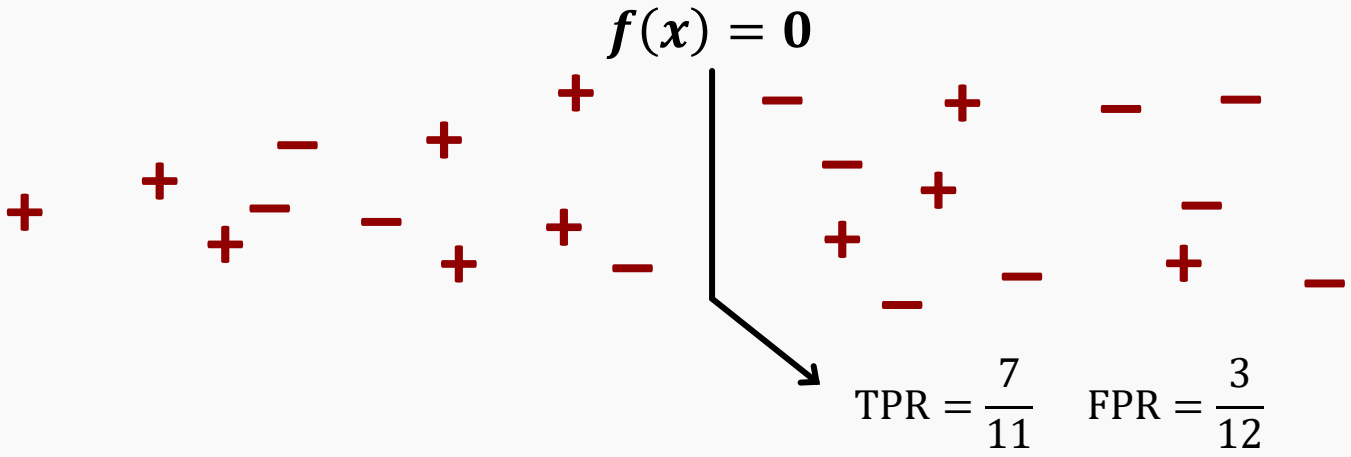
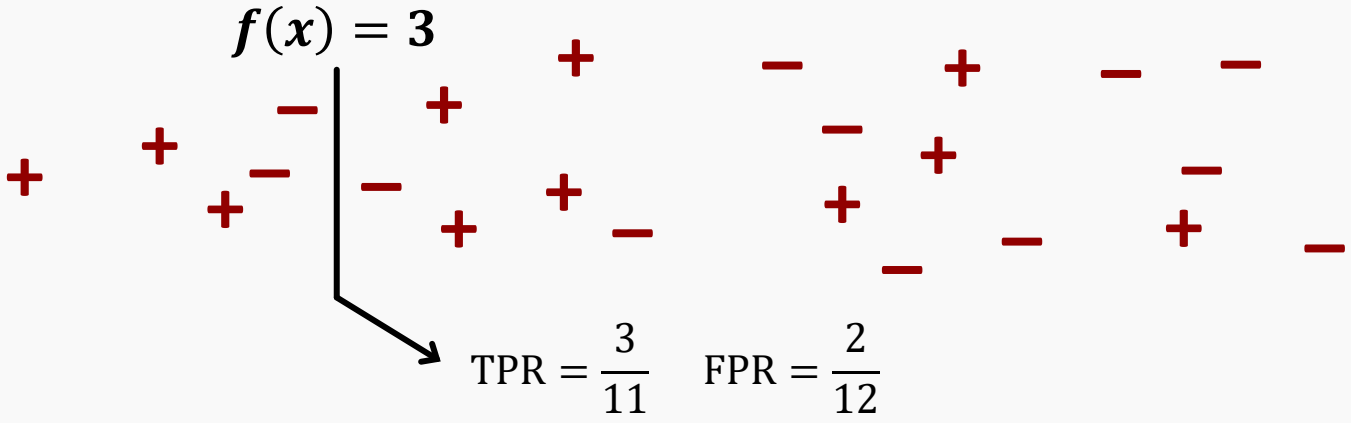
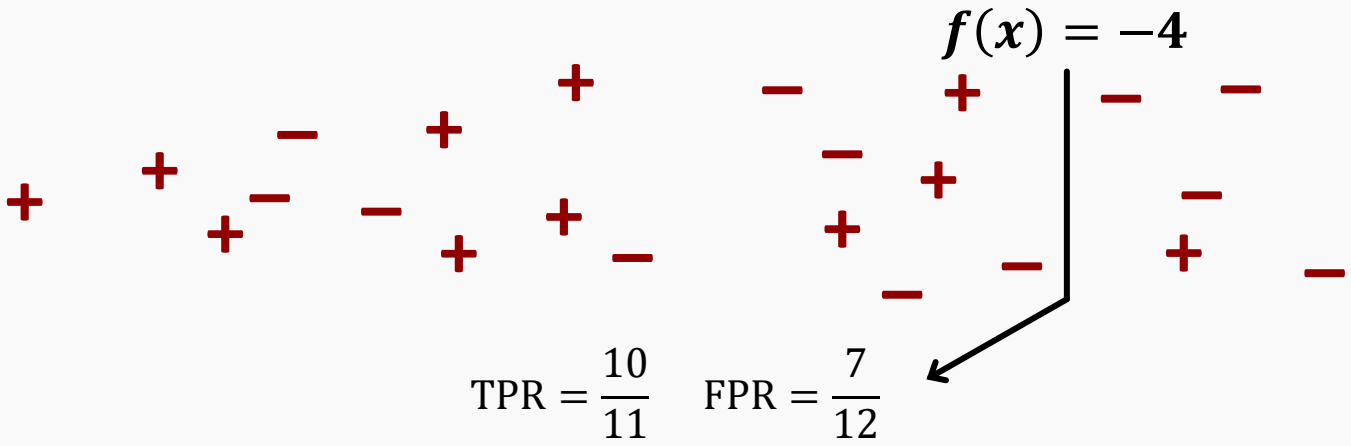
Radio Operating Characteristic (ROC) curves

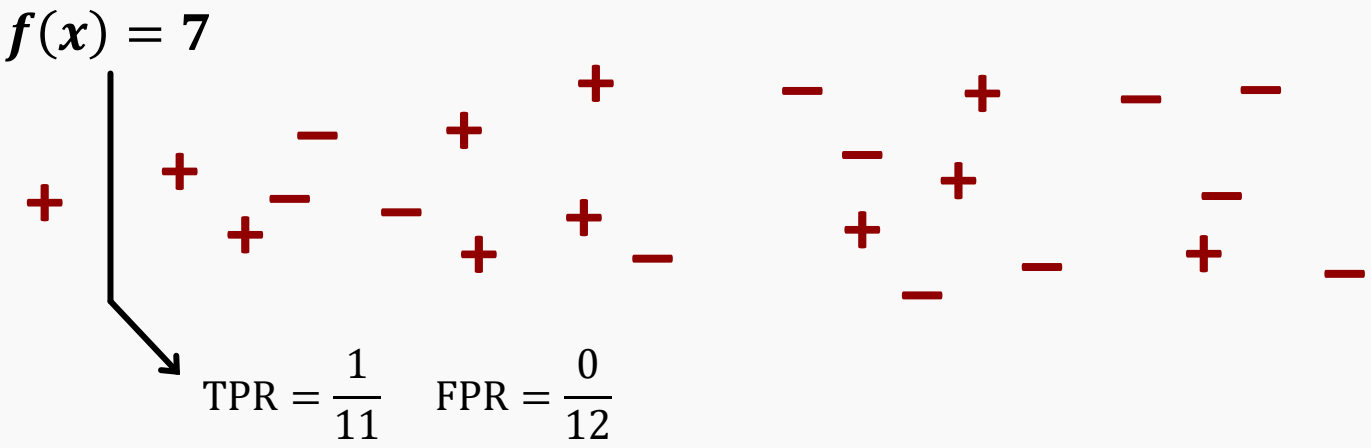
- Started during WWII for analyzing radar signals.
- For a particular False Positive Rate (FPR), what is the True Positive Rate (TPR)?
- FPR = # of negatives that were classified by the ML algorithm as positives / total # of negatives
- TPR = # of positives that were classified by the ML algorithm as positives / total # of positives

Illustrative examples in geometric notation adjusting the **Decision Boundaries** below:

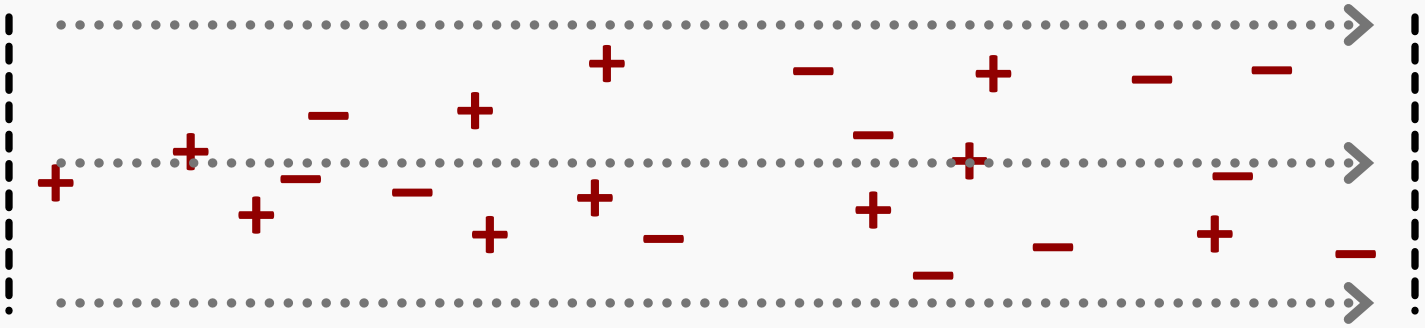








To define what an **ROC Curve** is in effect, image taking the decision boundaries computed above and sweeping the function across the entire plot below. As the boundary computes the evaluation metrics at each point, it will collect and replot a graph to represent the dynamic of evaluation metrics across the latter sweep: **(ROC Curves can be swept against both single classifiers and algorithms)**



ROC Curve

For a given False Positive Rate (**FPR**), what is the True Positive Rate (**TPR**)?