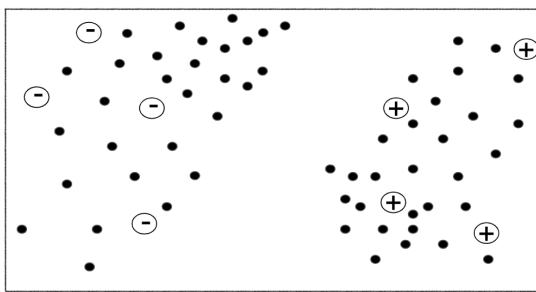
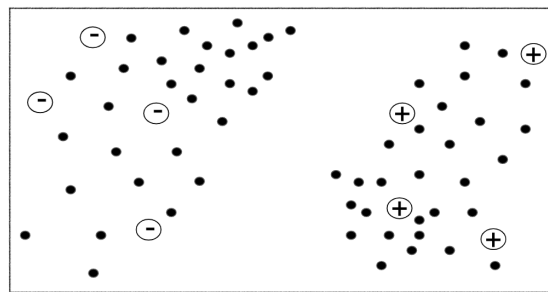


# 1 Semi-Supervised Learning

Consider the dataset in the figure below with labeled (L) data (class: "+" and "-") and unlabeled (U) (solid black circles) data. Show how the unlabeled data would help a semi-supervised SVM ( $S^3VM$ ) as compared to supervised SVM. Plot the separating hyper-planes in addition to the marginal boundaries produced by each algorithm in its corresponding sub-graph.



SVM



$S^3VM$

**Solution:**