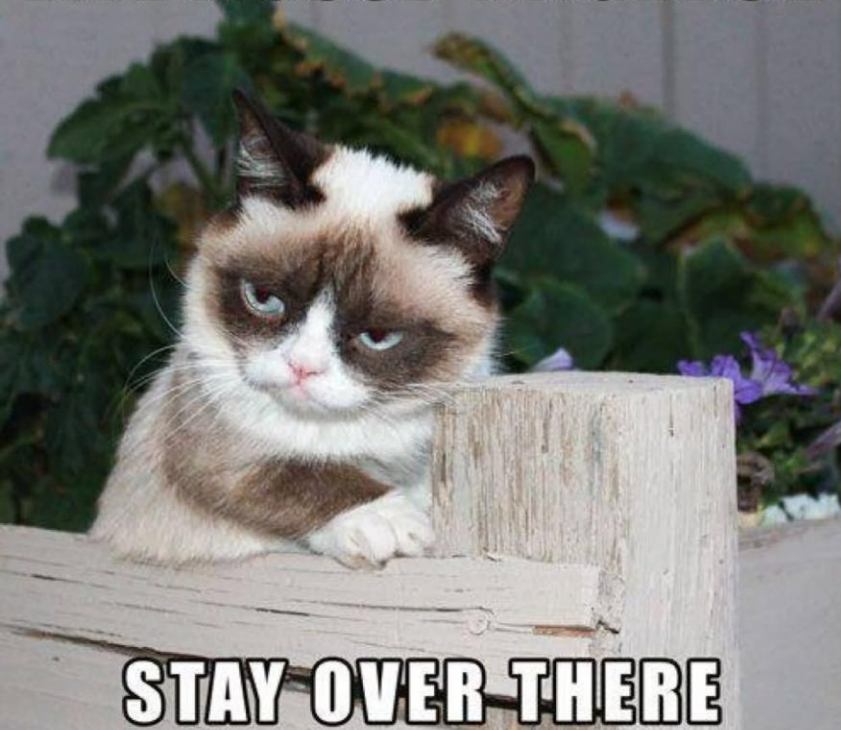


**LIKE A GOOD NEIGHBOR**



**STAY OVER THERE**

**Howdy neighbor!  
Can I borrow a cup  
of milk?**



**K  
ZZZ**

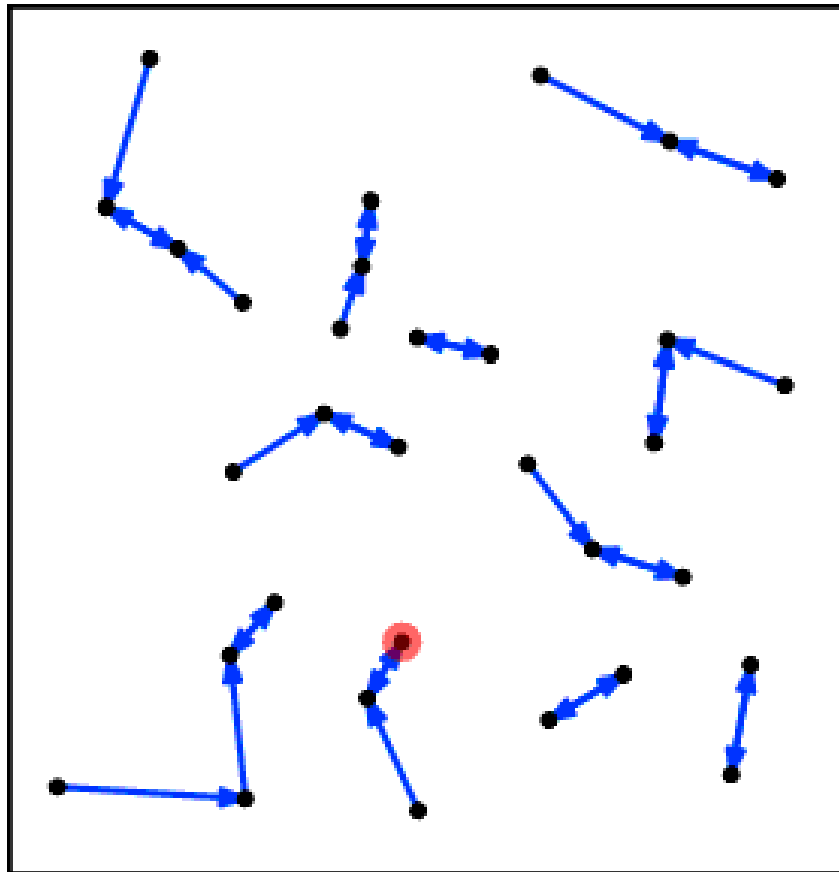


**New neighbors**



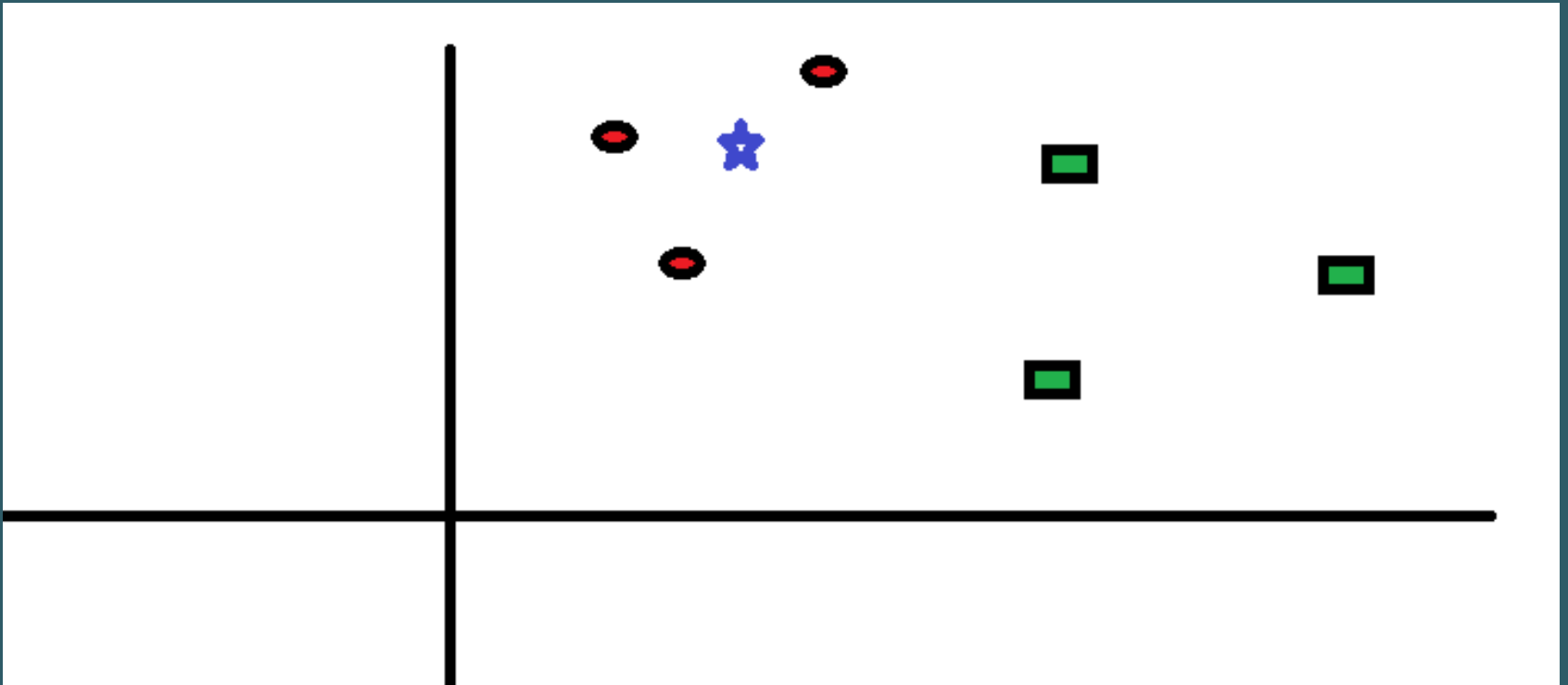
# KNN

- K Nearest Neighbors



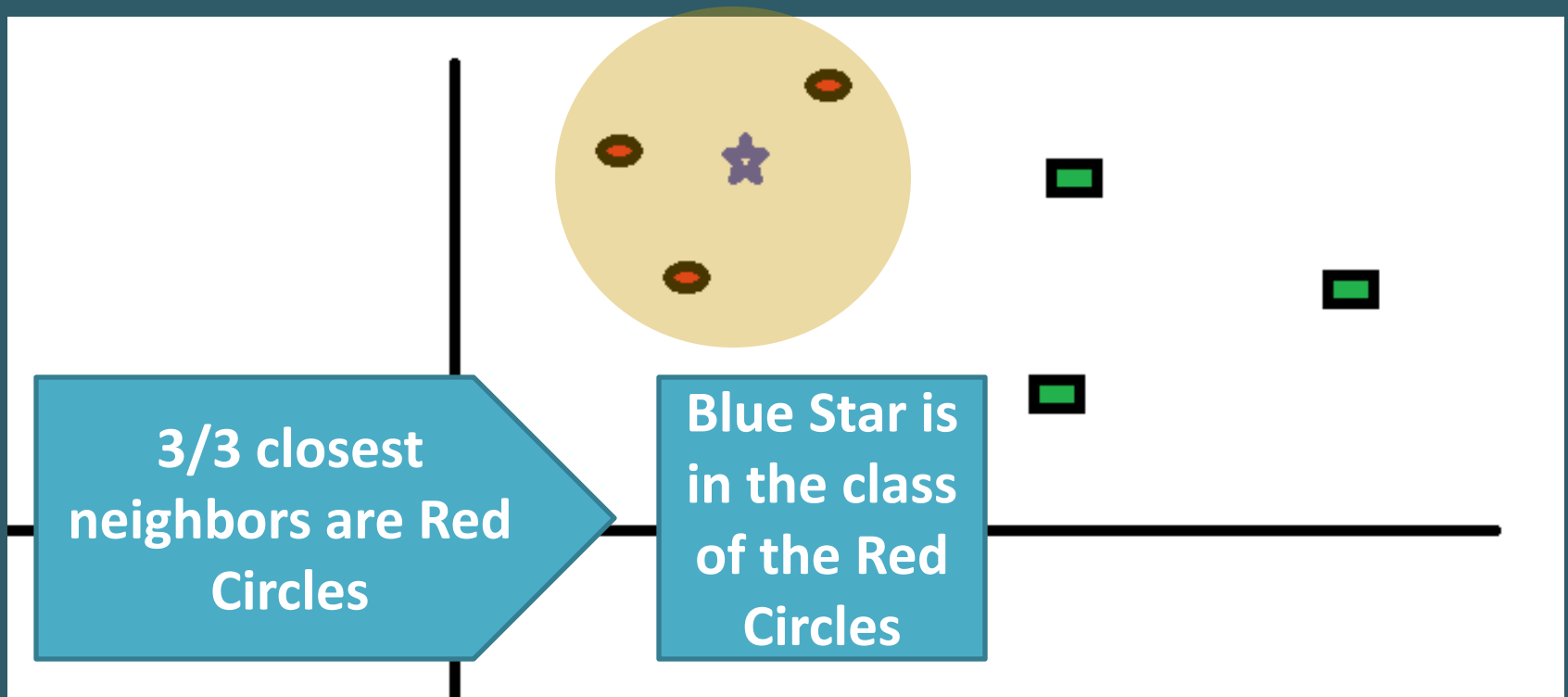
# KNN

- Ex. Find the class of the blue star



# KNN

- Say, we want the 3 ( $K = 3$ ) nearest neighbors to be accounted for when determining class



# Boundary Becomes Smoother

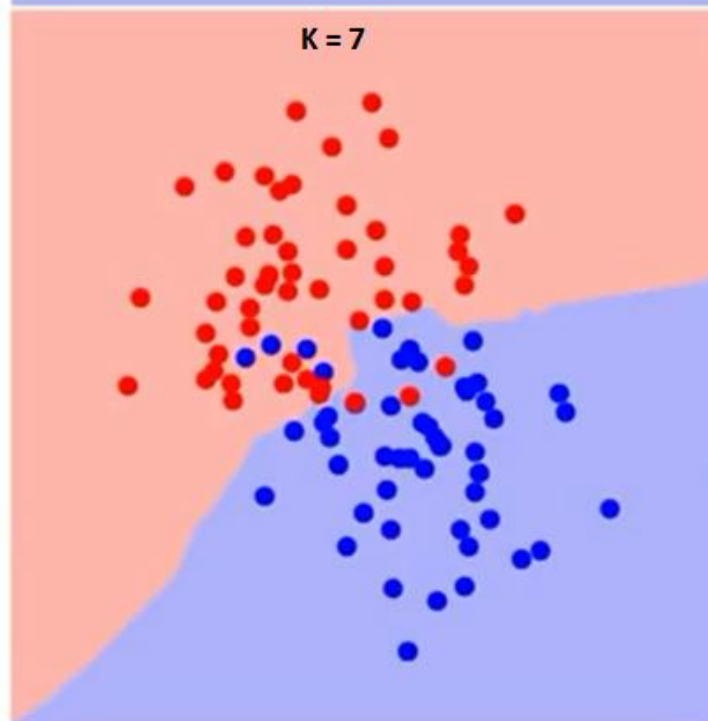
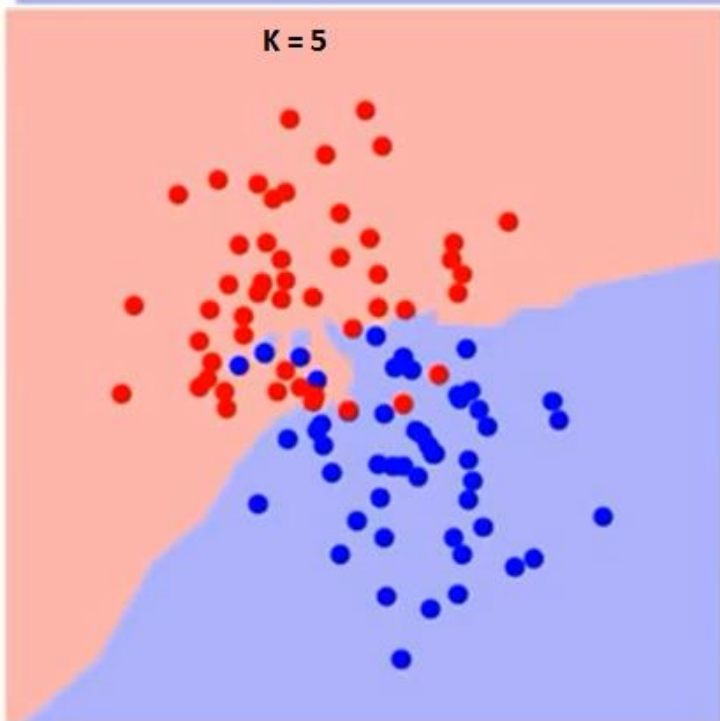
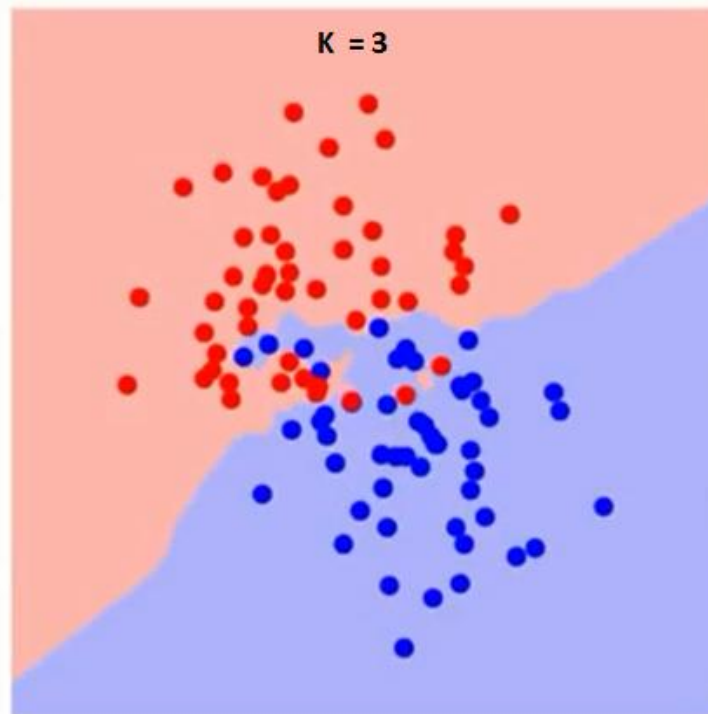
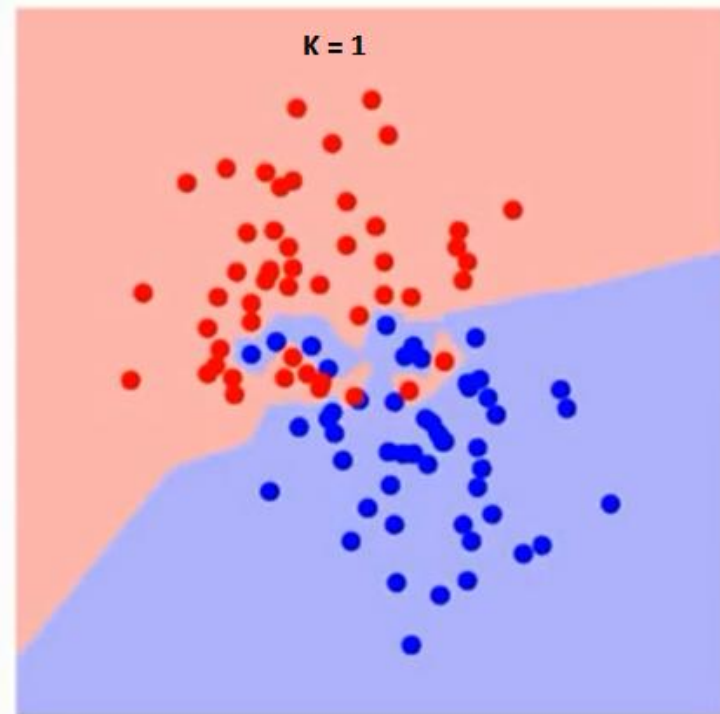
All Red  
or All Blue

$K = 1$

$K = 3$

$K = 5$

$K = 7$



# KNN

- $K = \# \text{ classes}$
- $K = 1 \rightarrow \text{OVERFITTING}$
- $K = 1000000000 \rightarrow \text{UNDERFITTING}$

