

Name:

ID:

1. Consider the vehicle data below and answer the following questions (Use laplacian smoothing constant $k=2$):

Example No.	Color	Type	Origin	Stolen?
1	Red	Sports	Domestic	Yes
2	Red	Sports	Domestic	No
3	Red	Sports	Domestic	Yes
4	Yellow	Sports	Domestic	No
5	Yellow	Sports	Imported	Yes
6	Yellow	SUV	Imported	No
7	Yellow	SUV	Imported	Yes
8	Yellow	SUV	Domestic	No
9	Red	SUV	Imported	No
10	Red	Sports	Imported	Yes

- (a) For a random vehicle selected what is the probability that it is stolen? $P(\text{stolen}=\text{yes}) = ?$ [2]
- (b) For a random vehicle selected, if it is a stolen vehicle what is the probability that the color will be yellow? $P(\text{color}=\text{yellow}|\text{stolen}=\text{yes}) = ?$ [2]
- (c) Given a car is stolen, what is the probability that it is of color red, SUV and domestic? [3]
- (d) A car has arrived, it is yellow, sports car and domestic. In what label a naive bayes classifier will classify the car to? [3]