Exercise: Naïve Bayes Classification

The Naïve Bayes classifier estimates probabilities of class labels and of attribute values given class labels based on training data, and for unseen examples predicts the class label that is most likely given those probability estimates.

In this exercise, we are given the following training data with attributes “veg?”, “type?”, “busy?” and “price?”, and class labels “pos” and “neg”.

id	veg?	type?	busy?	price?	class
1	yes	italian	yes	low	pos
2	no	french	no	med	neg
3	yes	greek	yes	high	neg
4	no	french	yes	low	neg
5	no	french	yes	high	neg
6	yes	italian	yes	med	neg
7	no	french	no	high	pos
8	yes	greek	yes	low	pos

We also have the following new, unlabeled data:

id	veg?	type?	busy?	price?	class
A	yes	italian	no	low	?
B	no	greek	yes	high	?
C	no	greek	no	low	?
D	yes	greek	no	med	?
E	no	italian	yes	med	?
F	yes	greek	no	high	?

Classify these new examples using Naïve Bayes based on the training data above. Remember from the example seen in class that to compare the probabilities of the two class labels for a record, we can ignore the $P(A_i)$ in the denominator.