Q1

Y={YES,NO}

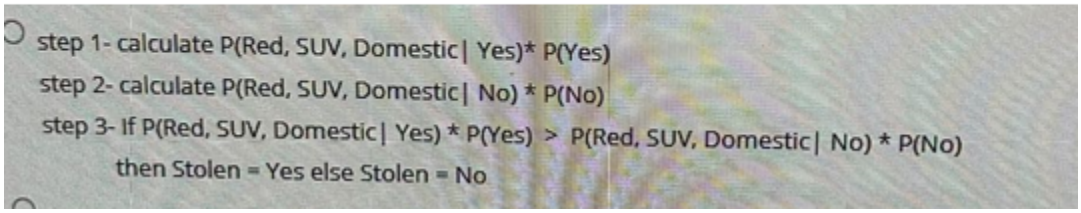
Because Y is dependent variable we try to explain and predict the value of the dependent variable with the help of the independent variables

Q2

X={x1=color, x2=type, x3=origin}

Because x is independent variable and we may have one or more independent variables

Q3



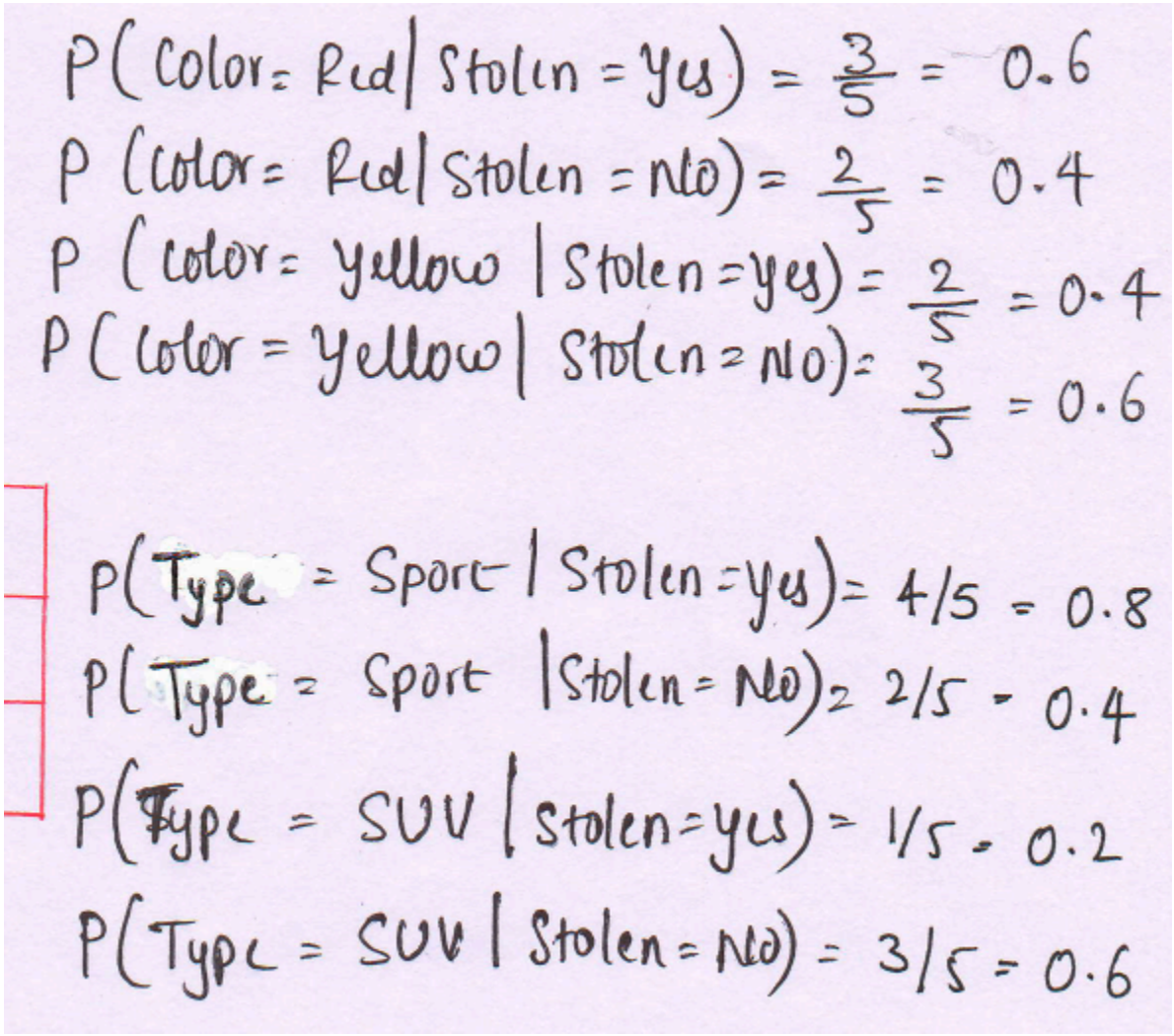
Because Naïve Bayes says that if We will calculate this value for all possible values of the class y value and pick up the output with maximum probability This can be expressed as:

$$y = argmax_y \;\; p(y) \prod_{i=1}^{n} \mathrm{P}(x_i|\mathrm{y})$$

Q4

0.024 and 0.072

P(stolen=yes)=5/10=0.5
P(stolen=no)=5/10=0.5



$P(\text{Origin} = \text{Domestic} \mid \text{Stolen} = \text{yes}) = 2/5 = 0.4$

$P(\text{origin} = \text{Domestic} \mid \text{Stolen} = \text{NO}) = 3/5 = 0.6$

$P(\text{origin} = \text{Imported} \mid \text{Stolen} = \text{yes}) = 3/5 = 0.6$

$P(\text{origin} = \text{Imported} \mid \text{Stolen} = \text{no}) = 2/5 = 0.4$

* For Stolen = yes :

$\Rightarrow (\text{Color} = \text{Red} \mid \text{stolen} = \text{yes}) * (\text{Type} = \text{SUV} \mid \text{stolen} = \text{yes}) * (\text{Origin} = \text{Domestic} \mid \text{Stolen} = \text{yes}) * P(\text{yes})$

$\Rightarrow 0.6 * 0.2 * 0.4 * 0.5$

$\Rightarrow 0.024$

* For Stolen = No :

$(\text{Color} = \text{Red} \mid \text{Stolen} = \text{No}) * (\text{Type} = \text{SUV} \mid \text{Stolen} = \text{No}) * (\text{Origin} = \text{Domestic} \mid \text{Stolen} = \text{No}) * P(\text{No})$

$\Rightarrow 0.4 * 0.6 * 0.6 * 0.5$

$\Rightarrow 0.072$

Q5

NO it is not

Since 0.024 < 0.072 then the vehicle is classified as not stolen,