$p(A) = p(B) = p(C) = 1/3$

$p(X1=x1, X2=x2|Y=A) = c1*\max(x1,x2)$

x1\x2	0	1	2
0	0	c1	2c1
1	c1	c1	2c1
2	2c1	2c1	2c1

Adding up, we find 13c1 = 1, i.e. c1 = 1/13

$p(X1=x1, X2=x2|Y=B) = c2*\min(x1,x2)$

x1\x2	0	1	2
0	0	0	0
1	0	c2	c2
2	0	c2	2c2

Adding up, we find 5c2 = 1, i.e. c2=1/5

$p(X1=x1, X2=x2|Y=C) = c3*|x1-x2|$

x1\x2	0	1	2
0	0	c3	2c3
1	c3	0	c3
2	2c3	c3	0

Adding up, we find 8c3 = 1, i.e. c3=1/8

Now the question is about $p(Y|X1=x1,X2=x2) = c*p(X1=x1,X2=x2|Y)*p(Y)$

For (x1=0,x2=0): $p(Y=A|0,0)=c*0*1/3=0$, $p(Y=B|0,0)=c*0*1/3=0$, $p(Y=C|0,0)=0$

So, this point has 0 probability under all three classes

For (x1=1,x2=2), $p(Y=A|1,2)=c*2/13*1/3=2c/39$, $p(Y=B|1,2)=c*1/5*1/3=c/15$, $p(Y=C|1,2)=c*1/8*1/3=c/24$. Prediction: B (largest)

Repeat for all points, and find the predicted class label for each.

Next, for Naïve Bayes assumption: $p(X1=x1, X2=x2|Y) = p(X1=x1|Y)*p(X2=x2|Y)$

For example, $p(X1=1|Y=B) = p(X1=1,X2=0|Y=B) + p(X1=1,X2=1|Y=B) + p(X1=1,X2=2|Y=B) = 0 + 1/5 + 1/5 = 2/5$

$p(X2=2|Y=B) = p(X1=0,X2=2|Y=B) + p(X1=1,X2=2|Y=B) + p(X1=2,X2=2|Y=B) = 0 + 1/5 + 2/5 = 3/5$

Therefore $p(Y=B \mid X1=1, X2=2) = c*p(X1=1|Y=B)*p(X2=2|Y=B)*p(Y=B)$

$$= c*(2/5)*(3/5)*(1/3) = 2c/25$$

Similarly calculate $p(Y=A \mid X1=1, X2=2)$ and $p(Y=C \mid X1=1, X2=2)$ and predict the label which has the highest probability value