**Midterm Assignment – 10429101 – Manank Valand**

1. 

Here to check if the function is a proper distance function or not, we can use the points given in the hint

Let say we have p(0,0), q(0,1) and r(1,1) as our 3 points

Now,

distance between “p” and “q” = d(p,q) = (|0-0| + |0-1|)­3 = 1

distance between “q” and “r” = d(q,r) = (|0-1| + |1-1|)­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­3 = 1

distance between “p” and “r” = d(p,r) = (|0-1| + |0-1|)3  = 8

now for proper distance function, d(p,r) <= d(p,q) + d(q,r)

but here, 8 > 1+1

So, this is not a distance function.

1. Please Check q2.R for the solution.
2. Please Check q3.R for the solution.
3. Please Check q4.xlsx for the solution.
4. Probability
5. P(Defective) = P (A and Defective) + P (B and Defective) + P (C and Defective)

=0.5\*0.05 + 0.3\*0.06 + (1-0.5-0.3) \* 0.08

=0.025 + 0.018 + 0.016

=0.059

= 5.9%

1. P (A and Defective) = 0.5\*0.05 = 0.025 = 2.5%
2. P(B/Defective) = P (B and Defective)/ P(Defective)

= 0.3 \* 0.06 / 0.059

= 0.3050

= 30.5%

1. P(B) (i.e. 0.3) is Not Equal to P(B/defective) (i.e. 0.305)

So, these events are not independent

1. T or F
2. False (We can also apply mode or mean of that column to missing values in column)
3. False (expert opinions are not the only factor. We also have to consider target)
4. True
5. False (That is obtained at the minimum error rate on test/validation dataset)
6. False (That is not autonomous yet, it still requires a huge amount of human interaction on every little phase)