Assignment #1: LDFs and Neural Networks

14/09/2016

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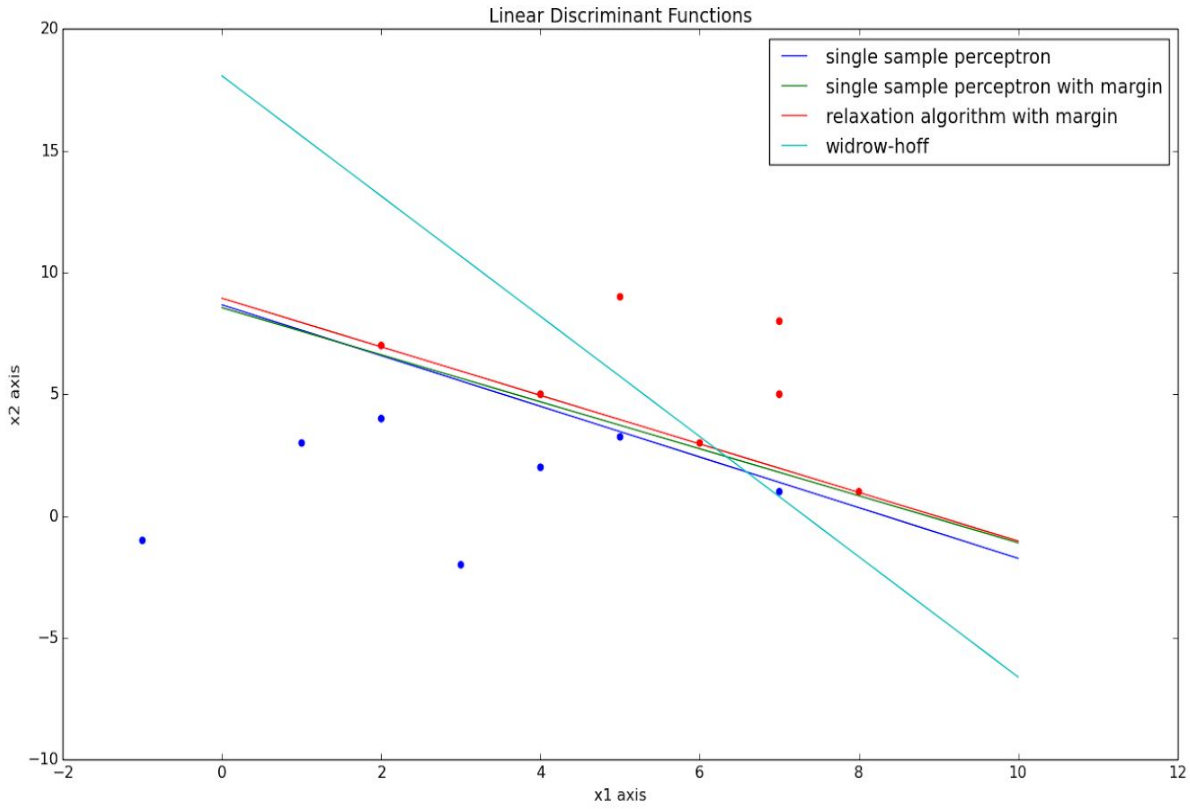
Problem 1



Ans 1 (Figure enclosed in the zip file)

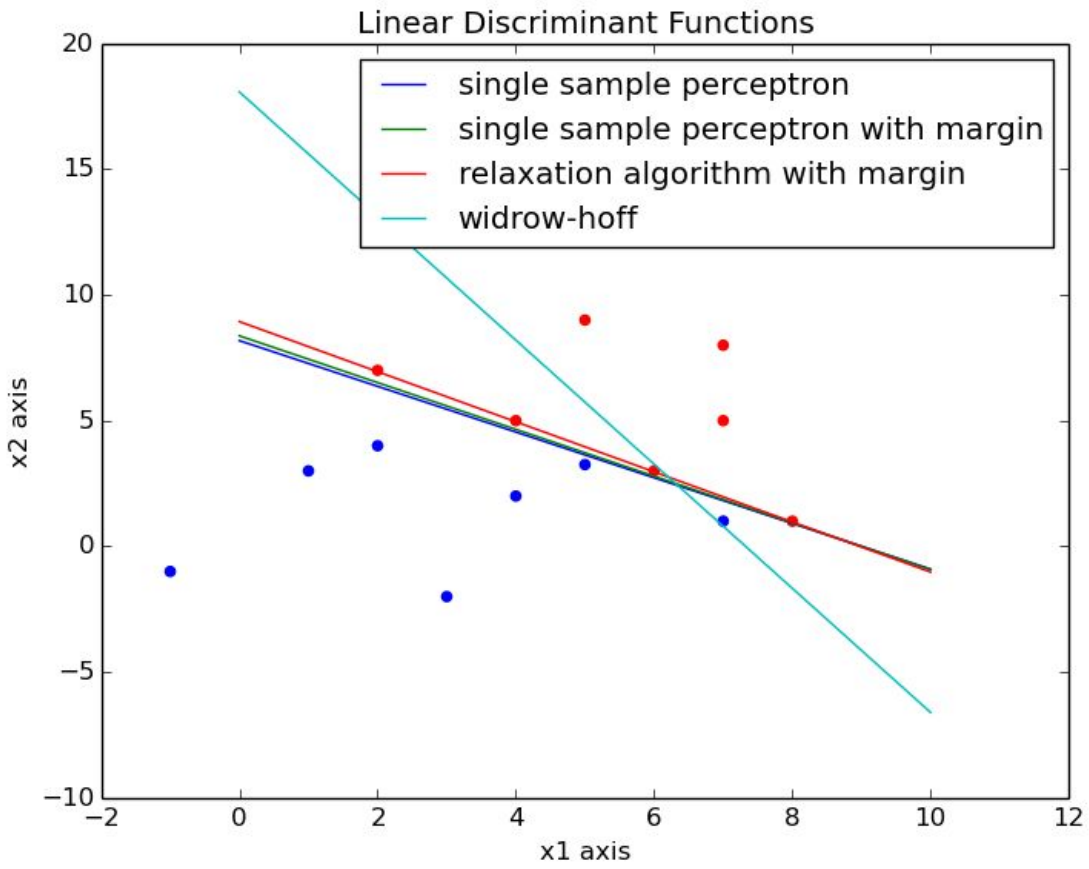
Ans 1.b

For a = [1, 1, 1], number of iterations required:

- perceptron Count: 3231
- perceptron_margin Count: 3343
- relaxation_margin Count: 40331
- lms Count: 99581(

(result shown below)

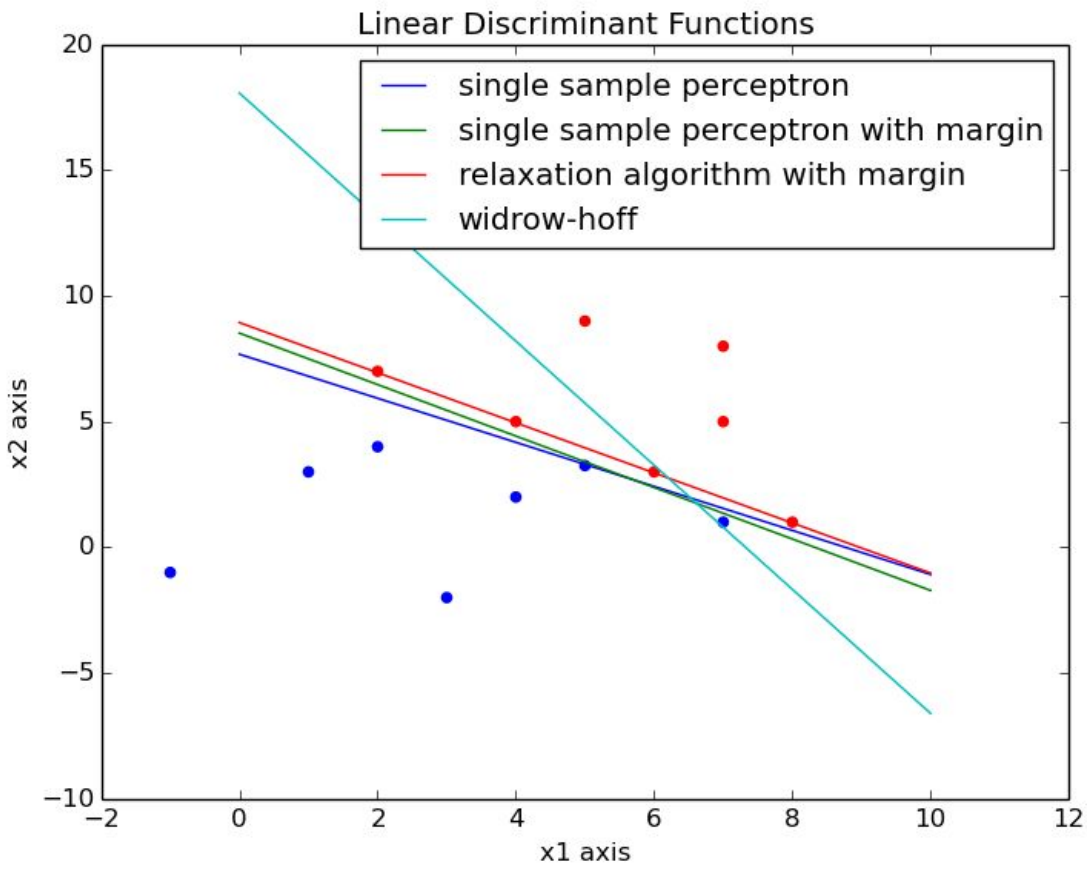
(



For a = [0.22333807 0.57343071 0.05958513] , a value chosen randomly, number of iterations required

- perceptron Count: 553
- perceptron_margin Count: 511
- relaxation_margin Count: 40359
- lms Count: 15217

(result shown below)



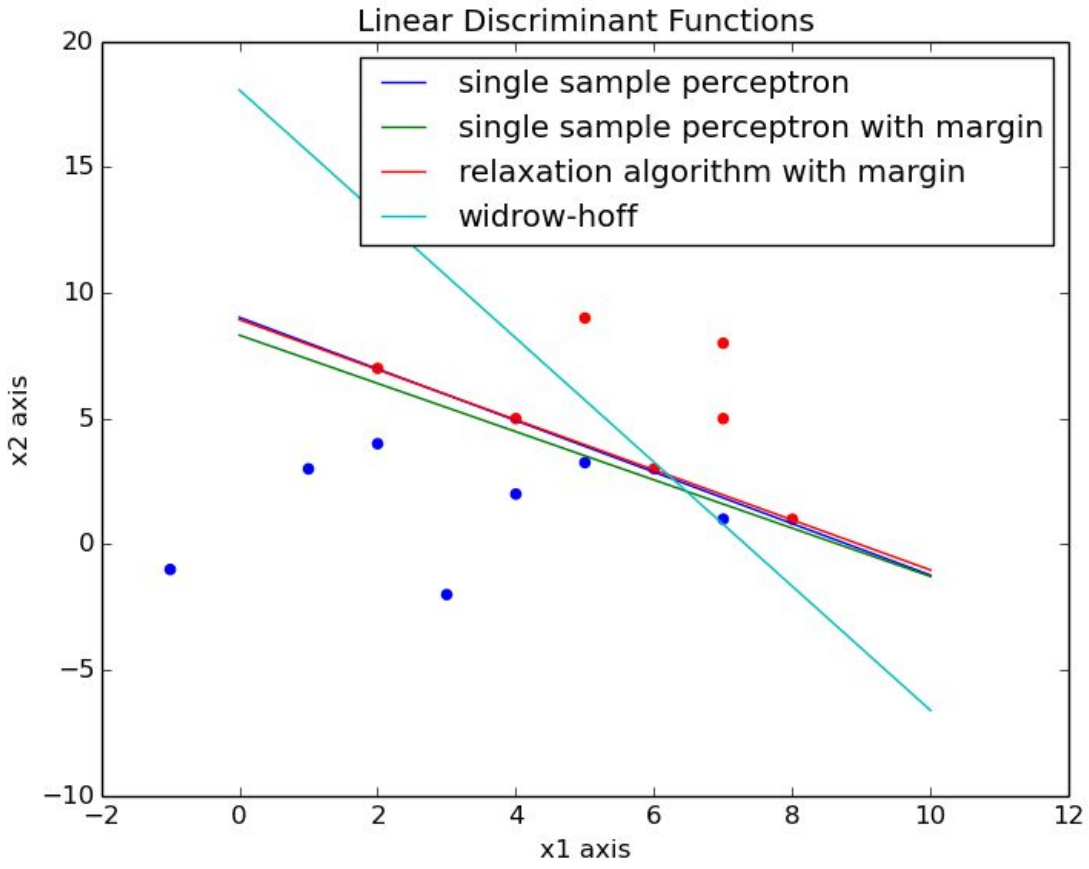
For a =: [0.39004085 0.08848676 0.80852589], a value chosen randomly, number of iterations required

- perceptron Count: 1029
- perceptron_margin Count: 4029
- relaxation_margin Count: 40331
- lms Count: 67017

For a = [-85 7 9], a value chosen closer to one given by perceptron, number of iterations required

- perceptron Count: 249
- perceptron_margin Count: 1327
- relaxation_margin Count: 21095
- lms Count: 82725

(results shown below)



A randomly chosen a vector works better as compared to assigning it value 1. Also if we assign it a value which is closer to the value given by one of the methods, then we get a faster convergence.

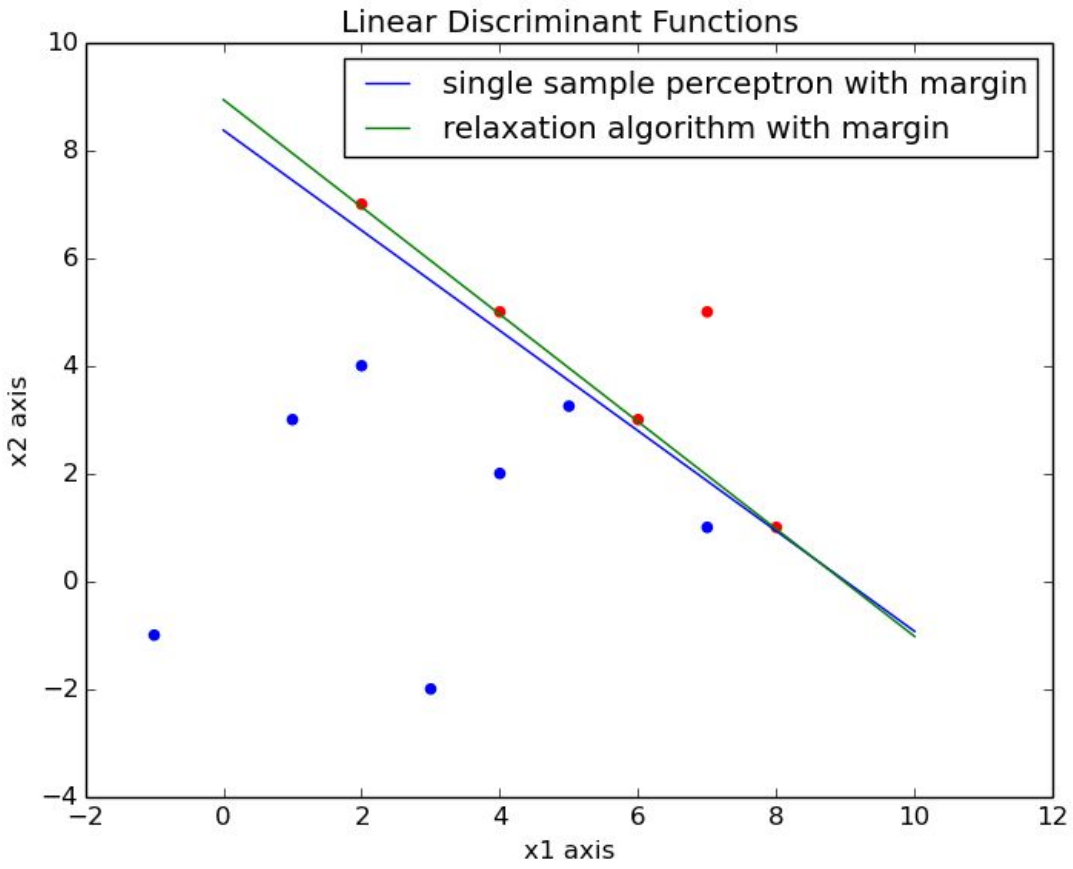
Ans 1.c

For margin b = 0.5:

a- init: [1. 1. 1.]

perceptron_margin Count: 3343

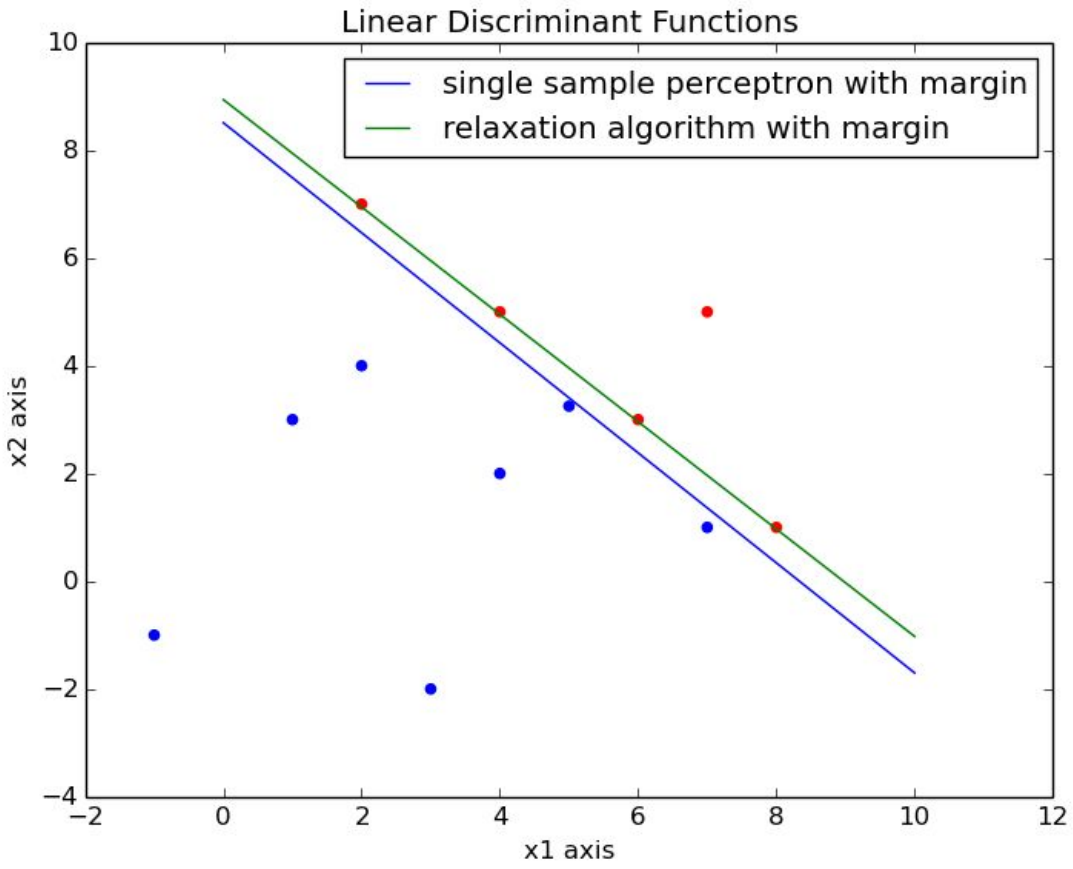
relaxation_margin Count: 40331



For margin b = 0.2

perceptron_margin Count: 4015

relaxation_margin Count: 40345

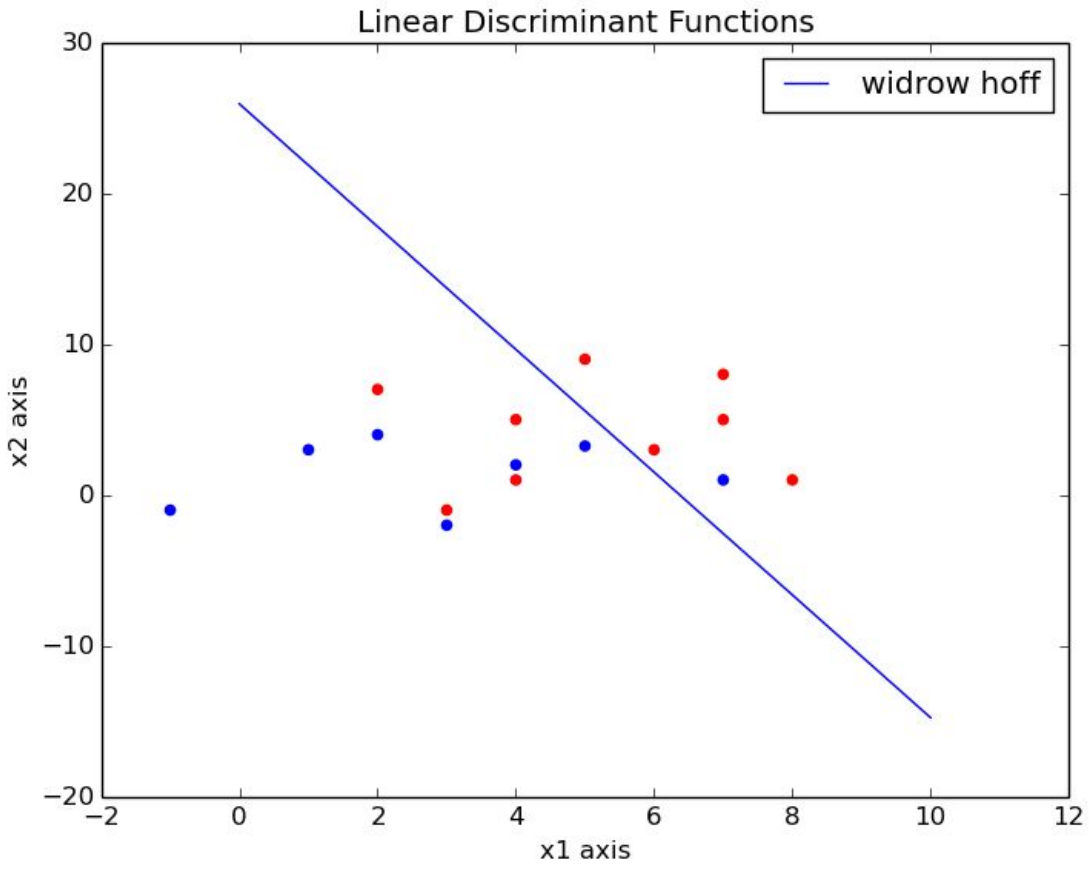


As we increase the margin, we are getting a more generalized LDF when using single sample perceptron with margin, but the result does not change much when using relaxation algorithm with margin.

Also runtime i.e. number of iterations required for convergence decrease in case of perceptron but there is not such change in case of relaxation.

Ans 1.d

On adding data points [4, 1], [3, -1] to w1, we make the set of points linearly non separable. However, widrow-hof still gives us an acceptable decision boundary



Ans 1.e

The code for all functions provided in the zip file.

Implementation details:

Using numpy, I am creating a matrix of dimension 14x2 which contains all the 14 points given in the question. We then augment all the rows of this matrix with 1 and also normalize the points of class w2 by multiplying it with -1.

In all the methods below, we treat the samples as 2-D vectors

Single-sample perceptron:

Iterate over all the points, one by one. If any sample is misclassified i.e. its dot product with the a vector is less than 0, then add the sample to the a vector. Continue this till all the samples are classified.

This method gave quite generalized LDF's in most of the cases.

Single sample perceptron with margin:

Same as above, but here a sample is considered misclassified if its dot product is less than a given margin b.

This method also gave generalized LDFs but somehow, the LDF tended to be nearer to one of the blue points which is nearest to the red class.

Relaxation algorithm with margin

Iterate over all the points, one by one. If any sample is misclassified, i.e. dot product is less than margin - b, then do the below for each misclassified sample

```
magnitude = np.linalg.norm(y[k, :]) // taking out the norm

magnitude2 = magnitude * magnitude //squaring the magnitude

factor = (b - a.dot(y[k, :])/magnitude2)

a = a + eta * factor * y[k, :]
```

Stop the loop, when all the samples are properly classified

In majority of the cases, the LDF obtained tended to very-near/stick to the points of the red class and hence was a little less generalized as compared to the above two cases.

Widrow-Hoff/LMS

Iterate over all the sample and for each sample, do the following

```
factor = b - a.dot(y[k, :])

additive = eta * factor * y[k, :]

a = a + additive
```

Terminate the loop when norm of loop is less than a specified theta.

In almost all of tries, it never gave a perfect answer. In every case, it misclassified the tree red points which are nearer to the blue class. However, it is the only method which generates an acceptable LDF in a linearly non separable case.

Problem 2

Pre-Processing

Before starting with the training, we pre-process the data so as to make it suitable for back-propagation. I sample the original 32x32 bitmap into an 8x8 bitmap by including every 4th column valuof every 4th row. We flatten this 8x8 matrix into a 64x1 vector by aligning each row after the other. In this manner we get two lists, one containing the 64x1samples and the other containing the digit which this sample specifies. Also since we also have to consider only 3 digits, I removed all the samples and corresponding digits except for digits 0, 1 and 5.

Training

After pre-processing the data, we train the neural net using stochastic-backpropagation.

We do this using the two methods `stochastic_backprop(digits, samples, d, nh, no, theta, eta)` and `feed_forward(x, wh, wo, nh, no).` Where digits and samples are the lists obtained using pre-processing, d is the dimension of the input, in our case it is 64, nh is the number of hidden units (I varied them from 8 to 20), no is the number of output units which is 2 in our case. I have taken theta as 0.002 and eta which is the learning rate as 0.5.

So in stochastic backprop we assign two matrices wh(weights of hidden units) and wo(weights of output units) with random values. Then we enter a loop in which for each iteration we pick a random sample. On this sample we run a feed-forward operation using our wh and wo matrices. On doing feed-forward, we obtain z which is the output vector, y which is the output obtained by hidden layers and the net activation corresponding to each hidden and output units. Using these vectors/matrices we adjust the values of each of the weights of the hidden and output units via backpropagation. Using our new weights, we again do the feed-forward operation so as to obtain the new value of z. We then calculate the error 0.5 * ||t-z||^2. If this value is less than theta, we stop the loop else we continue.

Cross-Validation

After learning is complete, we cross validate our learning using the dataset ***optdigits-orig.cv*** . We pre-process this file also so that is becomes suitable for our operations . After pre-processing, on each of the samples, we run our feed-forward operation to get a z vector. Since we are using a sigmoid, we don't get exact values 0,1 but values such as 0.98656 or 0.12564. We approximate these values to 0,1 and then

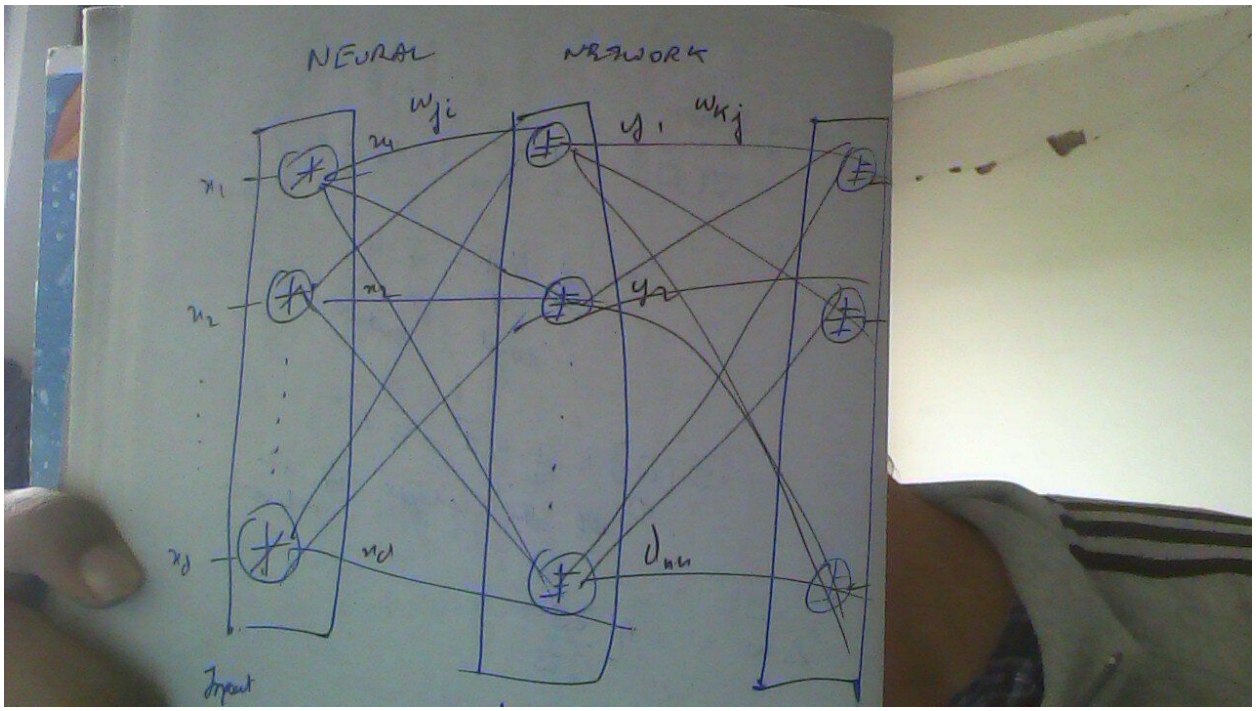
convert these 0,1 containing vectors into one of the 3 digit 0,1,5 (depending on our encoding). We match this value which we have got via our neural net with the original value which is provided in the data set. We calculate the percentage of samples which have been correctly classified so as to get an estimate of goodness of our neural net.

Result

When I used 20 hidden units, on multiple runs, the maximum percentage of correct classifications which I was able to obtain was only approx 37% i.e the neural net was only able to correctly classify 37 out of 100 samples.

This percentage is quite low, the possible reasons may be:

- Weights have been assigned random values.
- Loss of data when we are sampling our bitmapped images from 32x32 to 8x8.



Weight Values

Number of hidden units = 20

0.00187355819078

Count: 1605

Correctly classified: 33.2191780822

Hidden Unit weights

(unit no. , input component)

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Number: 0

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z obtained: [0.06073375 0.99998596]

Number: 1

Sample: [0 0 0 1 0 0 0 0 0 0 0 1 1 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 1 0 0]

z obtained: [0.06069137 0.99998595]

Number: 5

Sample: [0 0 0 1 1 0 0 0 0 0 0 1 1 1 1 0 0 0 1 1 0 0 0 0 0 0 0 1 0 1 1 0 0 0 0 1 1 0 0 1 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 1 0 0 0 0 0 1 1 0 0 0]

z obtained: [0.06073619 0.99998595]

Number: 1

Sample: [0 0 0 0 0 1 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 1 0 0 0 0 1 1 1 1 0 0 0 0 1 1 1 1 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 0 0]

z obtained: [0.06068729 0.99998597]

Number: 0

Sample: [0 0 0 0 1 0 0 0 0 0 1 1 1 1 0 0 0 0 1 0 0 0 1 0 0 0 1 0 0 0 1 0 0 0 1 0 0 0 1 0 0 0 1 0 0 1 0 0 0 0 1 0 0 0 1 0 0 0 1 0 0 0 1 0 0 1 0 0 0 0 0 1 1 1 0 0]

z obtained: [0.06073931 0.99998595]

Number: 5

Sample: [0 0 0 0 0 0 0 0 0 0 1 1 1 1 1 0 0 0 1 1 0 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 1 1 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 1 0 0 0 0 0 0 1 1 0 0 0 1 1 1 0 0 0]

z obtained: [0.06069226 0.99998597]

Number: 5

Sample: [0 0 0 0 0 0 0 0 0 0 1 1 1 1 1 0 0 0 1 1 0 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 1 1 0 0 0 0 0 0 1 1 1 1 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 0 0 0]

z obtained: [0.06070227 0.99998597]

Number: 5

Sample: [0 0 0 0 0 0 0 0 0 0 1 1 1 1 1 0 0 0 0 1 0 0 0 0 0 0 1 0 0 0 0 0 0 0 1 1 1 1 0 0 0 0 0 0 1 1 1 1 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 1 0 0]

z obtained: [0.06075839 0.99998592]

Number: 1

Sample: [0 0 0 0 1 0 0 0 0 0 0 0 1 1 0 0 0 0 0 1 1 1 0 0 0 0 1 1 1 1 0 0 0 0 1 1 1 1 0 0 0 0 1 1 1

0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 1 0 0]

z obtained: [0.06069018 0.99998597]

Number: 0

Sample: [0 0 0 0 0 0 0 0 0 0 1 1 1 1 0 0 0 0 1 1 0 1 0 0 0 0 1 0 0 0 1 0 0 0 1 0 0 0 1 0 0
0 1 0 0 0 1 1 0 0 1 0 0 0 1 1 0 1 1 0 0 0 0 1 1 1 1 0]

z obtained: [0.06068729 0.99998597]

Number: 1

Sample: [0 0 0 0 0 1 0 0 0 0 0 0 1 1 0 0 0 0 0 1 1 1 0 0 0 0 1 1 1 1 0 0 0 0 1 1 1
1 0 0 0 0 0 1 1 1 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 1 0]

z obtained: [0.06068622 0.99998597]

Number: 5

Sample: [0 0 0 0 0 0 1 0 0 0 1 1 1 1 1 0 0 0 1 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 1 1 1
0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 1 1 0 0 0 1 1 1 0 0 0]

z obtained: [0.06072043 0.99998595]

Number: 0

Sample: [0 0 0 0 0 0 0 0 0 0 0 1 1 1 0 0 0 0 1 1 0 1 0 0 0 0 1 0 0 0 1 0 0 0 1 0 0 0 1 0 0
0 1 0 0 0 1 0 0 0 1 0 0 0 0 1 0 1 1 0 0 0 0 1 1 1 1 0 0]

z obtained: [0.06070947 0.99998596]

Number: 1

Sample: [0 0 0 0 0 0 0 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 1
1 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 0 0 0]

z obtained: [0.06068692 0.99998597]

Number: 5

Sample: [0 0 0 0 1 0 0 0 0 0 0 0 1 1 1 0 0 0 0 1 1 0 0 0 0 0 0 1 0 0 0 0 0 0 0 1 1 1
1 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 1 1 0 0 0 0 1 1 1 0 0]

z obtained: [0.06073968 0.99998594]

Number: 1

Sample: [0 0 0 0 0 0 0 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 1
1 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 1 0 0]

z obtained: [0.06068569 0.99998597]

Number: 0

Sample: [0 0 0 0 1 0 0 0 0 0 0 1 1 1 0 0 0 0 1 1 1 1 1 0 0 0 1 1 0 0 1 0 0 0 1 0 0
 0 1 0 0 0 1 0 0 0 1 0 0 0 1 0 0 1 1 0 0 0 0 1 1 1 0 0]

z obtained: [0.06068941 0.99998597]

Number: 1

Sample: [0 0 0 1 1 0 0 0 0 0 0 1 1 1 0 0 0 0 1 1 1 1 0 0 0 0 0 1 1 0 0 0 0 0 1 1 1
 1 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 1 0 0]

z obtained: [0.06068364 0.99998597]

Number: 5

Sample: [0 0 0 1 1 0 0 0 0 0 1 1 1 1 0 0 0 0 1 1 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 1
 0 0 0 0 0 0 1 1 1 0 0 0 0 0 0 0 1 0 0 0 0 1 1 1 1 0 0]

z obtained: [0.06068799 0.99998597]

Number: 0

Sample: [0 0 0 0 0 0 0 0 0 0 0 1 1 0 0 0 0 0 1 1 1 1 0 0 0 0 1 1 0 0 1 0 0 0 1 0 0
 0 1 0 0 0 1 0 0 0 1 0 0 0 1 0 0 1 1 0 0 0 0 1 1 1 0 0]

z obtained: [0.06070094 0.99998596]

Number: 5

Sample: [0 0 0 1 1 1 0 0 0 0 0 1 1 1 1 0 0 0 1 1 0 0 0 0 0 1 1 1 1 0 0 0 0 0 1 1 1
 1 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 1 0 0 0 0 0 1 1 1 0 0]

z obtained: [0.06068702 0.99998597]

Number: 0

Sample: [0 0 0 1 0 0 0 0 0 0 0 1 1 1 0 0 0 0 1 1 0 0 0 0 0 0 1 0 0 0 1 0 0 0 1 0 0
 0 1 0 0 0 1 0 0 0 1 0 0 0 1 0 0 1 1 0 0 0 0 1 1 0 0 0]

z obtained: [0.06074259 0.99998594]

Number: 0

Sample: [0 0 0 0 0 0 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 1 1 0 0 0 0 1 0 0 1 1 0 0 0 1 0 0
 0 1 0 0 0 1 0 0 1 1 0 0 0 1 0 0 1 1 0 0 0 0 1 1 1 0 0]

z obtained: [0.06069261 0.99998597]

Number: 5

Sample: [0 0 0 0 0 1 0 0 0 0 1 1 1 1 1 0 0 0 1 0 0 0 0 0 0 0 1 1 1 0 0 0 0 0 0 0 0
1 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 1 0 0 0 0 0 1 0 0 0 0 0 1 1 1 0 0]

z obtained: [0.06080314 0.99998591]

Number: 5

Sample: [0 0 0 0 1 1 0 0 0 0 0 1 1 1 0 0 0 0 1 1 0 0 0 0 0 0 1 0 0 0 0 0 0 0 1 1 1
1 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 1 0 0 0 0 0 1 1 0 0 0]

z obtained: [0.06074326 0.99998594]

Number: 0

Sample: [0 0 0 0 1 0 0 0 0 0 0 1 1 1 0 0 0 0 1 1 0 0 1 0 0 0 1 0 0 0 1 0 0 0 1 0 0
0 1 0 0 0 1 0 0 0 1 0 0 0 1 0 0 0 1 0 0 0 0 1 1 1 1 0]

z obtained: [0.06073853 0.99998595]

Number: 0

Sample: [0 0 0 0 0 0 0 0 0 0 0 1 1 1 0 0 0 0 1 1 0 0 1 0 0 0 1 0 0 0 1 0 0 0 1 0 0
0 1 0 0 0 1 0 0 0 1 0 0 0 1 1 0 1 0 0 0 0 0 1 1 1 0 0]

z obtained: [0.06072778 0.99998595]

Number: 0

Sample: [0 0 0 0 1 0 0 0 0 0 0 1 1 1 0 0 0 0 1 1 0 1 0 0 0 0 1 0 0 0 0 0 0 0 1 0 0
0 1 0 0 0 1 0 0 0 1 0 0 0 1 1 0 0 1 0 0 0 0 1 1 1 1 0]

z obtained: [0.06070368 0.99998596]

Number: 1

Sample: [0 0 0 0 0 0 0 0 0 0 0 0 0 1 1 0 0 0 0 0 1 1 1 0 0 0 1 1 1 1 0 0 0 0 1 0 1
1 0 0 0 0 0 0 1 1 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 1 0 0]

z obtained: [0.06077014 0.99998593]

Number: 5

Sample: [0 0 0 0 0 0 0 0 0 0 0 1 1 1 1 0 0 0 1 0 0 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 1
1 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 1 0 0 0 0 0 1 1 0 0 0]

z obtained: [0.06076929 0.99998593]

Number: 0

Sample: [0 0 0 0 1 0 0 0 0 0 0 1 1 1 0 0 0 0 0 1 0 1 0 0 0 0 1 1 0 0 1 0 0 0 1 0 0 0 1 0 0 0 1 0 0 0 1 1 0 1 1 0 0 0 0 1 1 1 0 0]

z obtained: [0.06069144 0.99998597]

Number: 1

Sample: [0 0 0 0 0 1 0 0 0 0 0 0 0 1 1 1 0 0 0 0 1 1 1 0 0 0 0 1 1 1 1 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 0 0]

z obtained: [0.06069333 0.99998596]

Number: 0

Sample: [0 0 0 0 1 0 0 0 0 0 0 1 1 1 0 0 0 0 1 1 0 1 0 0 0 0 1 1 0 0 1 0 0 0 1 0 0 0 1 0 0 0 1 0 0 0 1 1 0 0 1 0 0 0 0 1 1 1 0 0]

z obtained: [0.06069235 0.99998597]

Number: 5

Sample: [0 0 0 0 1 1 0 0 0 0 0 1 1 1 1 0 0 0 1 1 0 0 0 0 0 0 1 1 1 0 0 0 0 0 0 0 1 1 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 1 0 0 0 0 0 1 1 1 0 0]

z obtained: [0.06071175 0.99998595]

Number: 1

Sample: [0 0 0 0 0 1 0 0 0 0 0 0 0 0 1 1 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 0 0 0 0 1 1 1 1 0 0 0 0 1 1 0 1 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 1 0 0]

z obtained: [0.06070136 0.99998595]

Number: 5

Sample: [0 0 0 0 0 1 0 0 0 0 1 1 1 1 1 0 0 0 1 1 1 0 0 0 0 0 1 0 0 0 0 0 0 0 1 1 0 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 0 0 0 0 1 1 1 0 0]

z obtained: [0.06069637 0.99998597]

Number: 1

Sample: [0 0 0 1 1 0 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 1 0 0 0 0 0 0 1 1 0 0 0 0 0 1 1 1 0 0 0 0 0 0 1 1 0 0 0 0 0 1 1 1 0 0 0 0 0 0 1 1 0 0 0 0 1 1 1 1 0]

z obtained: [0.06068478 0.99998597]

Number: 0

Sample: [0 0 0 0 0 0 0 0 0 0 1 1 1 1 0 0 0 0 1 1 0 1 1 0 0 0 1 0 0 0 1 0 0 0 1 0 0

0 1 0 0 0 1 0 0 0 1 0 0 0 1 0 0 1 0 0 0 0 1 1 1 1 0 0]

z obtained: [0.06069551 0.99998597]

Number: 1

Sample: [0 0 0 0 0 1 0 0 0 0 0 0 1 1 1 0 0 0 0 1 1 1 0 0 0 0 1 0 0 1 0 0 0 0 0 0 1
1 0 0 0 0 0 0 1 0 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 0 0 0]

z obtained: [0.06065209 0.99998591]

Number: 5

Sample: [0 0 0 0 1 1 1 0 0 0 1 1 1 1 1 0 0 1 1 1 0 0 0 0 0 0 1 1 0 0 0 0 0 0 0 1 1
0 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 1 0 0]

z obtained: [0.06068469 0.99998598]

Number: 1

Sample: [0 0 0 0 1 0 0 0 0 0 0 0 1 1 0 0 0 0 0 1 1 1 0 0 0 0 1 1 1 0 0 0 0 0 1 1 1
0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 0 0 0 0 0 0 0 1 1 0 0]

z obtained: [0.06069345 0.99998595]

Number: 1

Sample: [0 0 0 0 0 0 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 1 1 0 0 0 0 1 1 1 1 0 0 0 0 1 1
1 1 0 0 0 0 1 1 1 0 0 0 0 0 1 1 1 0 0 0 0 1 1 1 1 0 0]

z obtained: [0.06068416 0.99998598]

Number: 1

Sample: [0 0 0 0 0 1 1 0 0 0 0 0 0 0 1 1 0 0 0 0 1 1 1 1 0 0 0 1 1 1 1 1 0 0 0 1 0 0
1 1 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 0 0 0 0 0 0 0 1 1 0]

z obtained: [0.06069809 0.99998597]

Number: 1

Sample: [0 0 0 0 0 0 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1
1 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 1 0 0]

z obtained: [0.06068569 0.99998597]

Number: 5

Sample: [0 0 0 1 1 1 0 0 0 0 1 1 1 1 0 0 0 1 1 1 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 1 0
0 0 0 0 0 0 1 1 0 0 0 0 0 0 0 1 0 0 0 0 0 1 1 1 0 0]

z obtained: [0.06072268 0.99998595]

Number: 0

Sample: [0 0 0 0 0 0 0 0 0 0 0 1 1 1 0 0 0 0 1 0 0 1 1 0 0 0 1 0 0 0 1 0 0 0 1 0 0
 0 1 0 0 0 1 0 0 1 1 0 0 0 1 0 0 1 0 0 0 0 0 1 1 1 0 0]

z obtained: [0.06072714 0.99998595]

Number: 0

Sample: [0 0 0 0 1 0 0 0 0 0 0 0 1 0 0 0 0 0 1 0 0 1 0 0 0 0 1 0 0 0 0 0 0 0 1 0 0
 0 1 0 0 0 1 0 0 1 1 0 0 0 0 1 0 1 1 0 0 0 0 1 1 1 0 0]

z obtained: [0.06078383 0.99998591]

Number: 0

Sample: [0 0 0 0 0 0 0 0 0 0 0 1 1 1 0 0 0 0 1 1 1 1 1 0 0 0 1 0 0 0 1 0 0 0 1 0 0
 0 1 0 0 0 1 0 0 1 0 0 0 0 1 0 1 1 0 0 0 0 0 1 1 0 0 0]

z obtained: [0.06069715 0.99998597]

Number: 5

Sample: [0 0 0 0 1 1 0 0 0 0 1 1 1 1 0 0 0 0 1 1 1 0 0 0 0 0 1 1 0 0 0 0 0 0 0 1 0
 0 0 0 0 0 0 1 1 0 0 0 0 0 1 1 1 0 0 0 0 0 0 1 1 0 0 0]

z obtained: [0.06069348 0.99998596]

Number: 0

Sample: [0 0 0 0 0 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 0 1 0 0 0 0 0 1 0 0 1 0 0 0 1 0 0
 0 1 0 0 0 1 0 0 1 1 0 0 0 0 1 0 1 1 0 0 0 0 1 1 1 0 0]

z obtained: [0.06071856 0.99998595]

Number: 5

Sample: [0 0 0 1 1 1 0 0 0 0 1 1 1 1 1 0 0 0 0 1 1 0 0 0 0 0 0 1 1 0 0 0 0 0 0 0 1
 0 0 0 0 0 0 0 1 0 0 0 0 0 1 0 1 0 0 0 0 0 1 1 1 0 0 0]

z obtained: [0.06067929 0.99998596]

Number: 0

Sample: [0 0 0 0 0 0 0 0 0 0 0 1 1 1 0 0 0 0 0 1 0 1 0 0 0 0 1 0 0 1 1 0 0 0 1 0 0
 1 1 0 0 0 1 0 0 1 0 0 0 0 0 1 1 1 0 0 0 0 1 1 1 0 0]

z obtained: [0.06069426 0.99998597]

Number: 5

Sample: [0 0 0 0 1 0 0 0 0 0 1 1 1 1 0 0 0 0 1 1 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 1 1 1 0 0]

z obtained: [0.06081527 0.99998582]

Number: 1

Sample: [0 0 0 0 1 0 0 0 0 0 0 1 1 0 0 0 0 0 1 1 1 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 1 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 1 0 0]

z obtained: [0.06071099 0.99998595]

Number: 0

Sample: [0 0 0 0 0 0 0 0 0 0 0 1 1 1 0 0 0 0 1 0 0 1 0 0 0 0 1 0 0 0 1 0 0 0 1 0 0 0 1 0 0 0 1 0 0 1 0 0 0 1 1 0 0 0 1 1 0 1 1 0 0 0 0 1 1 1 0 0]

z obtained: [0.0607043   0.99998596]

Number: 1

Sample: [0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 1 1 0 0 0 0 0 1 1 1 0 0 0 0 1 1 1 1 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 1 0]

z obtained: [0.06073241 0.99998594]

Number: 1

Sample: [0 0 0 0 1 0 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 1 0 0 0 0 1 1 1 1 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 1 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 1 0]

z obtained: [0.06068557 0.99998597]

Number: 5

Sample: [0 0 0 1 1 0 0 0 0 0 1 1 1 1 1 0 0 0 1 0 0 0 0 0 0 0 1 1 1 1 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 1 1 0 0 0 1 0 0 1 1 0 0 0 1 1 1 1 0 0]

z obtained: [0.06069139 0.99998597]

Number: 0

Sample: [0 0 0 0 1 0 0 0 0 0 0 1 1 1 0 0 0 0 1 1 0 1 0 0 0 0 1 0 0 0 1 0 0 0 1 0 0 0 1 0 0 0 1 0 0 1 0 0 0 1 1 0 0 0 1 1 0 1 1 0 0 0 0 1 1 1 0 0]

z obtained: [0.06069701 0.99998597]

Number: 1

Sample: [0 0 0 0 1 0 0 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 0 0 0 0 0 1 1 1 0 0 0 0 1 1 1 1 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 1 0]

z obtained: [0.06069404 0.99998597]

Number: 1

Sample: [0 0 0 0 0 0 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 0 0 0 0 1 1 1 1 0 0 0 0 1 0 1 1 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 1 0]

z obtained: [0.0607148   0.99998596]

Number: 5

Sample: [0 0 0 0 0 0 0 0 0 0 0 1 1 1 0 0 0 0 1 1 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 1 1 0 0 0 0 1 0 0 1 1 0 0 0 0 0 0 0 1 0 0 0 0 1 1 1 1 0]

z obtained: [0.06071964 0.99998596]

Number: 0

Sample: [0 0 0 0 1 0 0 0 0 0 0 1 1 1 0 0 0 0 0 1 0 0 1 0 0 0 1 1 0 0 1 0 0 0 1 0 0 0 1 0 0 0 1 1 0 1 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 0 0 0]

z obtained: [0.06069656 0.99998597]

Number: 1

Sample: [0 0 0 1 1 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 1 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 0 0 0 0 0 1 1 1 1 0]

z obtained: [0.06069173 0.99998596]

Number: 1

Sample: [0 0 0 0 1 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 1 0 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 1 0]

z obtained: [0.06069924 0.99998596]

Number: 1

Sample: [0 0 0 0 0 1 0 0 0 0 0 0 1 1 0 0 0 0 0 1 1 1 0 0 0 0 1 1 1 1 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 0 0 0 0 0 0 0 1 1 0 0]

z obtained: [0.06070094 0.99998594]

Number: 0

Sample: [0 0 0 0 0 0 0 0 0 0 0 1 1 1 1 0 0 0 1 1 0 0 1 0 0 0 1 0 0 0 1 0 0 0 1 0 0 0 1 0 0

0 1 0 0 0 1 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 1 1 1 0 0]

z obtained: [0.0608235 0.99998591]

Number: 5

Sample: [0 0 0 1 1 1 0 0 0 0 1 1 1 1 1 0 0 0 1 0 0 0 0 0 0 0 1 1 0 0 0 0 0 0 0 1 1
1 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 1 0 0 0 0 1 1 1 1 0 0]

z obtained: [0.06069142 0.99998597]

Number: 0

Sample: [0 0 0 1 1 0 0 0 0 0 0 1 0 1 0 0 0 0 1 1 0 1 1 0 0 0 1 1 0 0 1 0 0 0 1 0 0
0 1 0 0 0 1 0 0 0 1 0 0 0 1 1 0 0 1 0 0 0 0 1 1 1 0 0]

z obtained: [0.06068959 0.99998597]

Number: 5

Sample: [0 0 0 0 0 1 0 0 0 0 0 1 1 1 1 0 0 0 0 1 0 0 0 0 0 0 0 1 0 0 0 0 0 0 1 1 1
1 1 0 0 0 0 0 0 0 1 0 0 0 1 0 0 0 1 0 0 0 0 1 1 1 0 0]

z obtained: [0.06070879 0.99998595]

Number: 0

Sample: [0 0 0 1 1 0 0 0 0 0 1 1 1 1 0 0 0 0 1 1 0 1 1 0 0 0 1 0 0 0 1 0 0 0 1 0 0
0 1 0 0 0 1 0 0 0 1 0 0 0 1 0 0 1 1 0 0 0 1 1 1 1 0 0]

z obtained: [0.06068655 0.99998597]

Number: 5

Sample: [0 0 0 1 0 0 0 0 0 0 0 1 1 1 1 0 0 0 1 0 0 0 0 0 0 0 1 1 1 1 0 0 0 0 1 1 1
1 1 0 0 0 0 0 0 0 1 0 0 0 1 0 0 0 1 0 0 0 1 1 1 1 0 0]

z obtained: [0.06069093 0.99998597]

Number: 5

Sample: [0 0 0 0 0 0 0 0 0 0 1 1 1 1 1 0 0 0 1 1 0 0 0 0 0 0 1 1 1 0 0 0 0 0 0 1 1
1 0 0 0 0 0 0 0 1 0 0 0 0 1 0 0 1 1 0 0 0 1 1 1 1 0 0]

z obtained: [0.06068959 0.99998597]

Number: 1

Sample: [0 0 0 0 0 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 0 0 0 0 0 1 1 1 0 0 0 0 0 1 0 1
0 0 0 0 0 0 0 1 1 0 0 0 0 0 0 0 1 0 0 0 0 0 1 1 1 1 0]

z obtained: [0.06076035 0.99998592]

Number: 1

Sample: [0 0 0 0 0 0 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 0 0 0 0 1 1 1 1 0 0 0 0 0 0 1
 1 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 1 0]

z obtained: [0.06072863 0.99998594]

Number: 0

Sample: [0 0 0 0 0 0 0 0 0 0 0 1 1 1 1 0 0 0 0 1 0 0 0 1 0 0 0 1 0 0 0 1 0 0 0 1 0 0
 0 1 0 0 0 1 0 0 0 1 0 0 0 1 0 0 0 1 0 0 0 0 1 1 1 0 0]

z obtained: [0.06080077 0.99998592]

Number: 0

Sample: [0 0 0 0 0 0 0 0 0 0 0 1 1 1 0 0 0 0 0 1 0 0 1 0 0 0 0 1 0 0 0 0 0 0 0 1 0 0
 0 1 0 0 0 1 0 0 0 1 0 0 0 1 0 0 0 1 0 0 0 0 1 1 1 0 0]

z obtained: [0.06083158 0.99998589]

Number: 1

Sample: [0 0 0 0 0 1 0 0 0 0 0 0 0 0 1 0 0 0 0 1 1 1 1 0 0 0 0 1 1 1 1 0 0 0 0 0 0 0
 1 1 0 0 0 0 0 0 1 0 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 0]

z obtained: [0.06074972 0.99998593]

Number: 0

Sample: [0 0 0 0 0 0 0 0 0 0 0 1 1 1 1 0 0 0 0 1 0 0 1 0 0 0 0 1 0 0 0 1 0 0 0 1 0 0
 0 1 0 0 0 1 0 0 0 1 0 0 0 1 1 0 0 1 0 0 0 0 1 1 1 0 0]

z obtained: [0.06071633 0.99998596]

Number: 0

Sample: [0 0 0 0 1 0 0 0 0 0 0 0 1 1 1 0 0 0 0 1 0 0 0 1 0 0 0 1 0 0 0 1 0 0 0 1 0 0
 0 1 0 0 0 1 0 0 0 1 0 0 0 0 1 0 0 0 0 0 0 0 1 1 1 0 0]

z obtained: [0.06080072 0.99998592]

Number: 0

Sample: [0 0 0 1 0 0 0 0 0 0 0 1 1 0 0 0 0 0 1 0 1 1 0 0 0 0 1 0 0 1 1 0 0 0 1 0 0
 0 1 0 0 0 1 0 0 0 1 0 0 0 1 1 0 0 1 0 0 0 0 1 1 1 0 0]

z obtained: [0.06070282 0.99998596]

Number: 1

Sample: [0 0 0 0 1 1 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 1 0 0 0 0 1 1 1 1 0 0 0 0 0 1 1
1 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 1 0]

z obtained: [0.06068473 0.99998598]

Number: 1

Sample: [0 0 0 0 0 1 0 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 0 0 0 0 1 1 1 1 0 0 0 0 1 0 1
1 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 0]

z obtained: [0.06075429 0.99998594]

Number: 5

Sample: [0 0 0 1 1 1 0 0 0 0 1 1 1 1 0 0 0 0 1 0 0 0 0 0 0 0 1 1 1 1 0 0 0 0 1 0 0
1 1 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 1 0 0 0 1 1 1 1 1 0]

z obtained: [0.06069368 0.99998597]

Number: 5

Sample: [0 0 0 1 0 0 0 0 0 0 1 1 1 0 0 0 0 0 1 0 0 0 0 0 0 0 1 1 1 1 0 0 0 0 0 0 0
1 1 0 0 0 0 0 0 0 1 0 0 0 1 0 0 0 1 0 0 0 1 1 1 1 1 0]

z obtained: [0.06072917 0.99998596]

Number: 0

Sample: [0 0 0 1 0 0 0 0 0 0 1 1 1 0 0 0 0 0 1 0 0 1 0 0 0 0 1 0 0 0 1 0 0 0 1 0 0
0 1 0 0 0 1 0 0 0 1 0 0 0 1 0 0 0 1 0 0 0 0 1 1 1 1 0]

z obtained: [0.06071913 0.99998596]

Number: 5

Sample: [0 0 0 0 1 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 1 1 0 0 0 0 0 0 0
0 1 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 1 0 0 0 0 1 1 1 1 0]

z obtained: [0.06079548 0.99998593]

Number: 0

Sample: [0 0 0 0 1 0 0 0 0 0 0 1 1 1 0 0 0 0 1 1 0 1 1 0 0 0 1 0 0 0 1 0 0 0 1 0 0
0 1 0 0 0 1 0 0 0 1 0 0 0 1 1 0 1 0 0 0 0 0 1 1 1 0 0]

z obtained: [0.0606951   0.99998597]

Number: 1

Sample: [0 0 0 1 0 0 0 0 0 0 0 1 1 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 1 0 0 0 0 0 0 0 1
0 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 0 0 0 0 0 1 1 1 1 1]

z obtained: [0.06069724 0.99998596]

Number: 5

Sample: [0 0 0 0 1 0 0 0 0 0 0 1 1 1 0 0 0 0 0 1 0 0 0 0 0 0 0 1 1 1 0 0 0 0 0 0 0 0
1 0 0 0 0 0 0 0 0 1 0 0 0 1 0 0 0 1 0 0 0 0 1 1 1 0 0]

z obtained: [0.06083377 0.99998586]

Number: 1

Sample: [0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1
0 0 0 0 0 0 0 1 0 0 0 0 0 0 1 1 1 0 0 0 0 1 1 1 1 1]

z obtained: [0.06071231 0.99998588]

Number: 5

Sample: [0 0 0 0 0 0 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 1 0 0 0 0 0 0 0 0
0 1 0 0 0 0 0 0 0 1 0 0 0 1 0 0 0 1 0 0 0 0 1 1 1 1 0]

z obtained: [0.06079158 0.99998588]

Number: 5

Sample: [0 0 0 0 0 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 0 0 0 0 0 0 1 1 1 1 0 0 0 0 0 0 0 0
0 1 0 0 0 0 0 0 0 1 0 0 0 1 0 0 0 1 0 0 0 1 1 1 1 1 0]

z obtained: [0.06081569 0.9999859]

Number: 1

Sample: [0 0 0 1 0 0 0 0 0 0 0 1 1 0 0 0 0 0 0 0 1 0 0 0 0 0 0 1 1 0 0 0 0 0 0 0 1
0 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 0 0 0 0 0 1 1 1 1 1]

z obtained: [0.06075548 0.99998591]

Number: 5

Sample: [0 0 0 0 1 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 0 0 0 0 0 0 1 1 1 1 0 0 0 0 0 0 0 0
1 1 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 1 0 0 0 0 1 1 1 1 0]

z obtained: [0.06083976 0.99998591]

Number: 1

Sample: [0 0 0 0 1 0 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1

1 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 1 1 0]

z obtained: [0.06068429 0.99998598]

Number: 0

Sample: [0 0 0 0 0 0 0 0 0 0 0 1 1 0 0 0 0 0 1 1 1 1 0 0 0 0 1 0 0 1 0 0 0 0 1 1 0
0 1 0 0 0 1 0 0 0 1 0 0 0 1 1 0 0 1 0 0 0 0 1 1 1 1 0]

z obtained: [0.06069769 0.99998597]

Number: 0

Sample: [0 0 0 0 1 0 0 0 0 0 0 1 1 1 0 0 0 0 1 1 1 1 1 0 0 0 1 0 0 0 1 0 0 0 1 0 0
0 1 0 0 0 1 0 0 0 1 0 0 0 1 1 1 1 0 0 0 0 0 1 1 1 0 0]

z obtained: [0.0606871   0.99998597]

Number: 1

Sample: [0 0 0 0 1 0 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 1
1 0 0 0 0 0 1 1 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 1 1 0]

z obtained: [0.0606858   0.99998597]

Number: 5

Sample: [0 0 0 0 1 1 0 0 0 0 1 1 1 1 0 0 0 0 1 0 0 0 0 0 0 0 1 0 1 0 0 0 0 0 1 1 1
1 0 0 0 0 0 0 0 1 0 0 0 0 0 0 1 1 0 0 0 0 1 1 1 1 0 0]

z obtained: [0.06069502 0.99998597]

Number: 1

Sample: [0 0 0 0 1 0 0 0 0 0 0 1 1 0 0 0 0 0 1 1 1 0 0 0 0 1 1 1 1 0 0 0 0 0 0 1 1
0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 0 0 0]

z obtained: [0.06070483 0.99998595]

Number: 5

Sample: [0 0 0 0 1 0 0 0 0 0 0 1 1 1 1 0 0 0 0 1 0 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 1
0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 1 0 0 0 0 0 0 1 1 0 0 0]

z obtained: [0.06082062 0.9999859]

Number: 1

Sample: [0 0 0 0 0 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1
1 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 1 1 0]

z obtained: [0.06068299 0.99998596]

Number: 5

Sample: [0 0 0 1 1 1 0 0 0 0 1 1 1 1 0 0 0 0 1 0 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 1
 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 1 0 0 0 0 0 1 0 0 0 0 1 1 0 0 0]

z obtained: [0.06073584 0.99998595]

Number: 0

Sample: [0 0 0 0 1 0 0 0 0 0 1 1 1 1 0 0 0 0 1 1 0 0 0 0 0 0 1 0 0 0 1 0 0 0 1 0 0
 0 1 0 0 0 1 0 0 0 1 0 0 0 1 0 0 1 0 0 0 0 0 1 1 1 0 0]

z obtained: [0.06072268 0.99998595]

Number: 0

Sample: [0 0 0 0 1 0 0 0 0 0 1 1 1 1 0 0 0 0 1 1 0 0 0 0 0 0 1 0 0 0 1 0 0 0 1 0 0
 0 1 0 0 0 1 0 0 0 1 0 0 0 1 0 0 1 0 0 0 0 0 1 1 1 0 0]

z obtained: [0.06072645 0.99998595]

Number: 5

Sample: [0 0 0 0 0 1 0 0 0 0 1 1 1 1 1 0 0 0 0 1 0 0 0 0 0 0 1 1 1 0 0 0 0 0 0 1 1
 1 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 1 0 0 0 0 1 1 1 1 1 0 0]

z obtained: [0.0606976   0.99998596]

Number: 0

Sample: [0 0 0 0 1 0 0 0 0 0 0 1 1 0 0 0 0 0 1 1 0 0 0 0 0 0 1 0 0 0 1 0 0 0 1 0 0
 0 1 0 0 0 1 0 0 0 1 0 0 0 0 0 0 0 1 0 0 0 0 1 1 1 0 0]

z obtained: [0.06087561 0.99998588]

Number: 1

Sample: [0 0 0 1 1 0 0 0 0 0 0 1 1 0 0 0 0 0 1 1 1 0 0 0 0 1 1 1 1 0 0 0 0 0 0 0 1
 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 1 0 0 0 0 0 0 1 1 0 0 0]

z obtained: [0.06076669 0.9999859]

Number: 0

Sample: [0 0 0 0 0 0 0 0 0 0 0 1 1 1 1 0 0 0 1 0 0 0 1 0 0 0 1 0 0 0 1 0 0 0 1 0 0
 0 1 0 0 0 1 0 0 1 0 0 0 0 1 0 1 1 0 0 0 0 1 1 1 0 0 0]

z obtained: [0.06071694 0.99998596]

Number: 1

Sample: [0 0 0 0 1 1 0 0 0 0 0 0 1 1 0 0 0 0 0 1 1 1 0 0 0 1 1 1 1 1 0 0 0 0 1 0 1
1 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 0 0]

z obtained: [0.06068797 0.99998597]

Number: 1

Sample: [0 0 0 1 1 0 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1
1 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 1 0 0]

z obtained: [0.06068426 0.99998597]

Number: 0

Sample: [0 0 0 1 1 0 0 0 0 0 1 1 1 1 0 0 0 0 1 0 0 1 1 0 0 0 1 0 0 0 1 0 0 0 1 1 0
0 1 0 0 0 1 1 0 0 1 0 0 0 1 0 0 0 1 0 0 0 1 0 0 0 1 1 1 1 0 0]

z obtained: [0.06068622 0.99998598]

Number: 5

Sample: [0 0 0 0 0 1 0 0 0 0 1 1 1 1 1 0 0 0 1 0 0 0 0 0 0 0 1 0 1 0 0 0 0 0 1 1 0
1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 1 1 1 0 0]

z obtained: [0.06078626 0.99998592]

Number: 0

Sample: [0 0 0 0 0 0 0 0 0 0 1 1 1 1 0 0 0 0 1 0 0 1 0 0 0 0 1 0 0 0 1 0 0 0 1 0 0 0
0 1 0 0 0 1 0 0 0 1 0 0 0 1 0 0 0 1 0 0 0 0 1 1 1 1 0]

z obtained: [0.06072727 0.99998595]

Number: 1

Sample: [0 0 0 0 0 0 0 0 0 0 1 1 1 1 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1
1 0 0 0 0 0 1 1 1 0 0 0 0 1 1 1 1 0 0 0 0 1 1 1 1 0 0 0 0 1 1 1 1 0 0]

z obtained: [0.06068394 0.99998598]

Number: 5

Sample: [0 0 0 1 1 1 0 0 0 0 1 1 1 1 0 0 0 0 1 1 0 0 0 0 0 0 1 1 1 1 0 0 0 0 1 1 0
1 1 0 0 0 0 0 0 0 1 0 0 0 0 0 0 1 1 0 0 0 1 1 1 1 0 0]

z obtained: [0.06068686 0.99998598]

Number: 0

Sample: [0 0 0 1 1 0 0 0 0 0 0 1 1 1 0 0 0 0 1 1 0 1 1 0 0 0 1 0 0 0 1 0 0 0 1 0 0
0 1 0 0 0 1 0 0 0 1 0 0 0 1 1 0 0 1 0 0 0 1 1 1 1 1 1 0]
z obtained: [0.06068663 0.99998597]
Number: 0
Sample: [0 0 0 0 1 0 0 0 0 0 0 1 1 1 0 0 0 0 1 0 0 1 0 0 0 0 1 0 0 0 1 0 0 0 1 1 0
0 1 0 0 0 1 0 0 0 1 0 0 0 1 0 0 0 1 0 0 0 0 1 0 1 0 0]
z obtained: [0.06073924 0.99998594]
Number: 1
Sample: [0 0 0 0 0 0 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 1 0 0 0 0 1 1 1 1 0 0 0 0 0 1 1
1 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 1 0 0 0 0 1 1 1 0 0 0 0 1 1 1 0 0]
z obtained: [0.06068564 0.99998597]
Number: 1
Sample: [0 0 0 0 0 0 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1
1 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 1 0 0 0 0 1 1 1 0 0 0 0 1 1 1 0 0]
z obtained: [0.06068569 0.99998597]
Number: 0
Sample: [0 0 0 1 0 0 0 0 0 0 0 1 0 0 0 0 0 0 1 0 1 1 0 0 0 0 1 0 0 0 1 0 0 0 1 0 0
0 1 0 0 0 1 0 0 0 1 0 0 0 1 1 0 1 0 0 0 0 0 1 1 1 0 0]
z obtained: [0.06071809 0.99998594]
Number: 1
Sample: [0 0 0 1 1 0 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1
1 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 1 1 0 0 0 0 1 1 1 0 0]
z obtained: [0.0606839   0.99998598]
Number: 1
Sample: [0 0 0 0 0 0 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 1 1 0 0 0 0 1 1
1 1 0 0 0 0 1 1 1 1 0 0 0 0 1 1 1 0 0 0 0 1 1 1 1 0]
z obtained: [0.06068459 0.99998598]
Number: 5
Sample: [0 0 0 0 1 1 0 0 0 0 1 1 1 1 0 0 0 0 1 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 1 1 1

0 0 0 0 0 0 0 1 1 1 0 0 0 0 0 0 1 1 0 0 0 0 1 1 1 1 0]

z obtained: [0.06070713 0.99998596]

Number: 5

Sample: [0 0 0 0 0 1 0 0 0 0 1 1 1 1 1 0 0 0 1 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 1 1
 0 0 0 0 0 0 0 1 1 0 0 0 0 0 0 0 0 1 0 0 0 0 1 1 1 1 0 0]

z obtained: [0.06077718 0.99998592]

Number: 1

Sample: [0 0 0 0 0 0 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 1 0 0 0 0 1 1 1 1 0 0 0 0 0 1 1
 1 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 1 0 0 0 0 1 1 1 0 0 0 0 1 1 1 1 0 0]

z obtained: [0.06068564 0.99998597]

Number: 0

Sample: [0 0 0 1 0 0 0 0 0 0 0 1 1 1 0 0 0 0 1 0 1 1 1 0 0 0 1 0 0 0 1 0 0 0 1 0 0
 0 1 0 0 0 1 0 0 0 1 0 0 0 1 0 0 1 0 0 0 0 0 1 1 1 0 0]

z obtained: [0.06070622 0.99998596]

Number: 5

Sample: [0 0 0 0 1 0 0 0 0 0 0 1 1 1 0 0 0 0 1 1 1 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 1
 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 1 1 0 0 0 0 1 1 1 1 0]

z obtained: [0.06073065 0.99998592]

Number: 5

Sample: [0 0 0 0 0 1 0 0 0 0 0 1 1 1 0 0 0 0 0 1 0 0 0 0 0 0 0 1 0 0 0 0 0 0 1 1 1
 1 0 0 0 0 0 1 1 1 1 0 0 0 0 0 0 0 1 0 0 0 0 0 1 1 1 0 0]

z obtained: [0.06070308 0.99998596]

Number: 5

Sample: [0 0 0 0 1 1 0 0 0 0 0 1 1 1 1 0 0 0 0 1 0 0 0 0 0 0 0 1 0 0 0 0 0 0 1 1 1
 0 0 0 0 0 0 1 1 1 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 1 0 0]

z obtained: [0.06070104 0.99998595]

Number: 1

Sample: [0 0 0 0 0 1 0 0 0 0 0 0 1 1 0 0 0 0 0 1 1 1 0 0 0 0 1 1 1 1 0 0 0 0 1 0 1
 1 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 0 0]

z obtained: [0.06069803 0.99998596]

Number: 0

Sample: [0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 1 1 1 1 0 0 0 0 1 1 1 1 1 0 0 0 1 0 0
 0 1 0 0 0 1 0 0 0 1 0 0 0 1 1 1 1 1 0 0 0 0 1 1 1 0 0]

z obtained: [0.0606886   0.99998597]

Number: 5

Sample: [0 0 0 0 1 1 0 0 0 0 0 1 1 1 1 0 0 0 0 1 0 0 0 0 0 0 1 0 0 0 0 0 0 0 1 1 1
 1 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 1 0 0 0 0 0 1 0 0 0 0 0 1 1 1 0 0]

z obtained: [0.0607153   0.99998595]

Number: 5

Sample: [0 0 0 0 0 1 0 0 0 0 0 1 1 1 0 0 0 0 0 1 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 1
 1 0 0 0 0 1 0 1 1 0 0 0 0 0 0 0 1 0 0 0 0 0 1 1 0 0]

z obtained: [0.06071644 0.99998595]

Number: 1

Sample: [0 0 0 0 0 1 0 0 0 0 0 0 0 1 0 0 0 0 0 0 1 1 0 0 0 0 0 1 1 1 0 0 0 0 1 1 1
 1 0 0 0 0 1 0 1 1 0 0 0 0 0 0 1 1 0 0 0 0 0 0 0 1 0 0]

z obtained: [0.06070538 0.99998595]

Number: 0

Sample: [0 0 0 0 1 1 0 0 0 0 1 1 1 1 0 0 0 0 1 1 0 0 1 0 0 0 1 0 0 0 1 0 0 0 1 0 0
 0 1 0 0 0 1 0 0 0 1 0 0 0 0 1 0 1 1 0 0 0 0 0 1 1 0 0]

z obtained: [0.06069881 0.99998597]

Number: 1

Sample: [0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 0 0 0 0 0 1 1 0 0 0 0 0 1 1 1 0 0 0 0 1 1 0
 1 0 0 0 0 1 0 0 1 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 1 0 0]

z obtained: [0.06073546 0.99998593]

Number: 1

Sample: [0 0 0 0 1 0 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 1
 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 0 0 0]

z obtained: [0.06069819 0.99998596]

Number: 5

Sample: [0 0 0 1 0 0 0 0 0 0 0 1 1 1 1 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 1 1
0 0 0 0 0 1 0 0 1 1 0 0 0 0 0 0 0 1 0 0 0 0 1 1 1 0 0]

z obtained: [0.06077803 0.99998591]

Number: 0

Sample: [0 0 0 0 0 1 0 0 0 0 0 1 1 1 1 0 0 0 1 1 0 0 1 0 0 0 1 0 0 0 1 0 0 0 1 0 0
0 1 0 0 0 1 0 0 0 1 0 0 0 1 1 0 0 1 0 0 0 0 1 1 1 1 0]

z obtained: [0.06070006 0.99998597]

Number: 0

Sample: [0 0 0 0 0 0 0 0 0 0 0 1 1 1 0 0 0 0 1 1 0 1 0 0 0 0 1 0 0 0 1 0 0 0 1 0 0
0 1 0 0 0 1 0 0 0 1 0 0 0 1 1 0 1 1 0 0 0 0 1 1 1 0 0]

z obtained: [0.06070031 0.99998596]

Number: 5

Sample: [0 0 0 0 0 0 0 0 0 0 1 1 1 1 1 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 1 1 0
0 0 0 0 0 1 1 1 1 0 0 0 0 0 0 0 0 1 0 0 0 1 1 1 1 0 0]

z obtained: [0.06073305 0.99998594]

Number: 5

Sample: [0 0 0 1 1 1 1 0 0 0 0 1 1 1 1 0 0 0 1 1 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 1
1 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 1 0 0 0 0 0 1 1 1 0 0]

z obtained: [0.06068878 0.99998597]

Number: 1

Sample: [0 0 0 0 0 1 0 0 0 0 0 0 1 1 1 0 0 0 0 1 1 1 0 0 0 0 1 1 1 1 0 0 0 0 0 0 1
1 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 0 0]

z obtained: [0.06069333 0.99998596]

Number: 5

Sample: [0 0 0 1 0 0 0 0 0 0 1 1 1 1 0 0 0 0 1 1 0 0 0 0 0 0 1 1 0 0 0 0 0 0 0 1 1
1 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 1 0 0 0 0 1 1 1 1 0 0]

z obtained: [0.06070656 0.99998596]

Number: 5

Sample: [0 0 0 0 1 1 0 0 0 0 1 1 1 1 1 0 0 0 1 0 0 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 1 1 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 1 0 0 0 0 1 1 1 0 0 0]

z obtained: [0.06069428 0.99998597]

Number: 1

Sample: [0 0 0 0 0 0 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 1 1 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 0 0 0]

z obtained: [0.06068373 0.99998597]

Number: 5

Sample: [0 0 0 1 1 1 0 0 0 0 1 1 1 1 1 0 0 0 1 0 0 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 1 1 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 1 1 0 0 0 0 0 1 1 0 0 0]

z obtained: [0.06069236 0.99998597]

Number: 5

Sample: [0 0 0 0 1 1 0 0 0 0 1 1 1 1 1 0 0 0 1 1 0 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 1 1 0 0 0 0 0 0 0 1 1 0 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 0 0 0 0 1 1 1 0 0]

z obtained: [0.06068734 0.99998598]

Number: 5

Sample: [0 0 0 0 0 0 0 0 0 0 1 1 1 1 1 0 0 0 1 1 0 0 0 0 0 0 1 1 1 1 0 0 0 0 1 1 1 1 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 1 1 0 0 0 0 1 1 1 0 0]

z obtained: [0.0606931   0.99998597]

Number: 5

Sample: [0 0 0 1 1 0 0 0 0 0 1 1 1 1 0 0 0 0 1 1 0 0 0 0 0 0 1 0 0 0 0 0 0 0 1 1 1 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 1 0 0 0 0 1 1 1 1 0 0]

z obtained: [0.06070505 0.99998596]

Number: 1

Sample: [0 0 0 0 0 0 0 0 0 0 0 1 1 0 0 0 0 0 1 1 1 0 0 0 0 0 0 1 1 1 0 0 0 0 0 0 1 1 1 0 0 0 0 0 0 1 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 1 0]

z obtained: [0.060692   0.99998597]

Number: 1

Sample: [0 0 0 0 1 0 0 0 0 0 0 1 1 1 0 0 0 0 1 1 1 1 0 0 0 0 1 1 1 1 0 0 0 0 0 1 1

0 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 1 0 0]

z obtained: [0.06068496 0.99998598]

Number: 1

Sample: [0 0 0 0 1 0 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 1 0 0 0 0 1 1 1 1 0 0 0 0 0 1 1
1 0 0 0 0 0 1 1 1 0 0 0 0 0 0 1 1 0 0 0 0 0 1 1 1 1 0 0]

z obtained: [0.06068546 0.99998597]

Number: 0

Sample: [0 0 0 1 0 0 0 0 0 0 0 1 1 1 0 0 0 0 1 0 0 1 0 0 0 0 1 0 0 0 1 0 0 0 1 0 0
0 1 0 0 0 1 0 0 1 1 0 0 0 1 1 0 1 0 0 0 0 0 1 1 1 0 0]

z obtained: [0.06070227 0.99998596]

Number: 5

Sample: [0 0 0 0 1 0 0 0 0 0 0 1 1 1 0 0 0 0 0 1 0 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 1
1 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 1 0 0 0 0 0 1 1 1 0 0]

z obtained: [0.06072582 0.99998595]

Number: 0

Sample: [0 0 0 0 1 0 0 0 0 0 0 1 1 1 0 0 0 0 1 1 0 1 1 0 0 0 1 0 0 0 1 0 0 0 1 0 0
0 1 0 0 0 1 0 0 0 1 0 0 0 1 1 0 1 1 0 0 0 0 1 1 1 0 0]

z obtained: [0.06069217 0.99998597]

Number: 0

Sample: [0 0 0 0 1 0 0 0 0 0 1 1 1 1 0 0 0 0 1 1 0 1 0 0 0 0 1 0 0 0 1 0 0 0 1 0 0
0 1 0 0 0 1 0 0 0 1 0 0 0 0 1 0 1 1 0 0 0 0 1 1 1 0 0]

z obtained: [0.06069343 0.99998597]

Number: 1

Sample: [0 0 0 0 1 0 0 0 0 0 0 1 1 1 0 0 0 0 1 1 1 1 0 0 0 0 1 1 1 1 0 0 0 0 0 0 1
1 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 1 0]

z obtained: [0.06068726 0.99998597]

Number: 5

Sample: [0 0 0 0 0 0 0 0 0 0 0 1 1 1 0 0 0 0 0 1 0 0 0 0 0 0 1 1 1 0 0 0 0 0 0 1 1
1 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 1 1 0 0 0 0 0 1 1 0 0 0]

z obtained: [0.06079099 0.9999859]

Number: 1

Sample: [0 0 0 1 1 0 0 0 0 0 0 1 1 1 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 0 0 0 0 0 1 1
 1 0 0 0 0 0 1 1 0 0 0 0 0 0 0 1 1 0 0 0 0 0 1 1 1 0 0]

z obtained: [0.06068496 0.99998596]

Number: 1

Sample: [0 0 0 0 0 0 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 0 0 0 0 0 1 1
 1 0 0 0 0 0 1 1 1 1 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 1 0]

z obtained: [0.06069387 0.99998596]

Number: 5

Sample: [0 0 0 1 1 0 0 0 0 0 0 1 1 1 0 0 0 0 0 1 0 0 0 0 0 0 0 1 1 1 0 0 0 0 0 0 0
 0 1 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 1 0 0 0 0 1 1 1 1 0]

z obtained: [0.06081708 0.99998589]

Number: 5

Sample: [0 0 0 0 1 0 0 0 0 0 0 1 1 1 1 0 0 0 1 1 0 0 0 0 0 0 1 1 1 1 0 0 0 0 0 0 0
 1 1 0 0 0 0 0 0 0 1 0 0 0 0 1 0 1 1 0 0 0 0 1 1 1 0 0]

z obtained: [0.06070401 0.99998597]

Number: 5

Sample: [0 0 0 0 1 0 0 0 0 0 1 1 1 1 0 0 0 0 1 0 0 0 0 0 0 0 1 1 1 1 0 0 0 0 0 0 1
 1 1 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 1 1 0 0 0 1 1 1 1 0 0]

z obtained: [0.06070213 0.99998597]

Number: 0

Sample: [0 0 0 1 1 0 0 0 0 0 1 1 1 1 0 0 0 0 1 1 0 1 0 0 0 0 1 1 0 1 1 0 0 0 1 0 0
 0 1 0 0 0 1 0 0 0 1 0 0 0 1 0 1 1 0 0 0 0 0 1 1 1 0 0]

z obtained: [0.06068574 0.99998598]

Number: 0

Sample: [0 0 0 1 1 0 0 0 0 0 1 1 1 1 0 0 0 0 1 1 0 1 0 0 0 0 1 0 0 1 0 0 0 0 1 0 0
 0 1 0 0 0 1 0 0 0 1 0 0 0 1 1 0 1 1 0 0 0 0 1 1 1 0 0]

z obtained: [0.0606885   0.99998597]

Number: 0

Sample: [0 0 0 0 0 0 0 0 0 0 0 1 1 1 1 0 0 0 1 0 1 1 1 0 0 0 1 0 0 0 1 0 0 0 1 0 0 0 1 0 0 0 1 0 0 0 1 0 0 0 1 1 0 1 1 0 0 0 0 1 1 1 0 0]

z obtained: [0.06069367 0.99998597]

Number: 1

Sample: [0 0 0 0 0 0 0 0 0 0 0 1 1 1 1 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 1 0 0]

z obtained: [0.06068547 0.99998597]

Number: 1

Sample: [0 0 0 0 0 1 0 0 0 0 0 0 0 1 1 0 0 0 0 0 0 0 1 1 0 0 0 0 0 1 1 1 1 0 0 0 0 1 1 1 1 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 0 0 0 0 0 0 0 1 1 0 0 0 0 0 0 0 1 1 0]

z obtained: [0.06069953 0.99998597]

Number: 5

Sample: [0 0 0 1 0 0 0 0 0 0 1 1 1 1 1 0 0 0 1 1 1 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 1 1 0 0 0 0 0 0 0 1 1 0 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 0 0 0 0 1 1 1 0 0]

z obtained: [0.06068917 0.99998597]

Number: 0

Sample: [0 0 0 0 0 0 0 0 0 0 0 1 1 1 0 0 0 0 0 1 0 1 1 0 0 0 0 1 0 0 1 0 0 0 1 0 0 0 1 0 0 0 1 0 0 0 0 1 0 0 0 1 0 0 0 1 0 0 0 0 1 0 1 0 0 0 0 0 1 1 1 0 0]

z obtained: [0.0607175   0.99998594]

Number: 5

Sample: [0 0 0 0 0 0 0 0 0 0 0 1 1 1 1 0 0 0 1 1 0 1 0 0 0 0 1 1 1 1 0 0 0 0 1 1 0 1 1 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 1 1 1 0 0]

z obtained: [0.06069981 0.99998597]

Number: 1

Sample: [0 0 0 1 1 1 0 0 0 0 1 1 1 1 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 1 0 0 0 0 1 1 1 1 0 0 0 0 1 1 1 1 0]

z obtained: [0.06068373 0.99998598]

Number: 1

Sample: [0 0 0 0 0 0 0 0 0 0 1 1 1 1 0 0 0 0 1 1 1 0 0 0 0 0 1 1 1 1 0 0 0 0 1 1 1 1 0 0 0 0 1 1 1 1 0 0 0 0 1 1 1 1 0 0 0 0 1 1 1 1 0 0]

z obtained: [0.06068392 0.99998598]

Number: 5

Sample: [0 0 0 0 1 1 0 0 0 0 1 1 1 1 1 0 0 1 1 1 0 0 0 0 0 0 1 0 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 1 1 0 0 0 0]

z obtained: [0.06071345 0.99998595]

Number: 1

Sample: [0 0 0 1 1 0 0 0 0 0 0 1 1 1 0 0 0 0 1 1 1 0 0 0 0 1 1 1 1 0 0 0 0 0 1 1 1 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 0 0 0]

z obtained: [0.06068784 0.99998597]

Number: 1

Sample: [0 0 0 0 1 1 0 0 0 0 0 0 1 1 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 1 0 0 0 0 1 1 1 1 0 0 0 0 0 0 1 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 1 1 0 0]

z obtained: [0.06070511 0.99998594]

Number: 0

Sample: [0 0 0 0 1 0 0 0 0 0 0 1 1 1 0 0 0 0 1 1 1 1 1 0 0 0 1 0 0 0 1 0 0 0 1 0 0 0 1 0 0 0 1 0 0 0 1 0 0 1 0 0 0 0 0 1 1 1 0 0]

z obtained: [0.06069723 0.99998597]

Number: 5

Sample: [0 0 0 1 1 0 0 0 0 0 1 1 1 1 1 0 0 0 1 1 0 0 0 0 0 0 1 1 0 0 0 0 0 0 0 1 1 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 1 0 0 0 0 0 1 1 1 0 0 0]

z obtained: [0.0607224   0.99998594]

Number: 1

Sample: [0 0 0 0 0 0 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 0 0 0 0 0 1 1 1 0 0 0 0 1 1 1 1 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 0 0]

z obtained: [0.06072312 0.99998594]

Number: 5

Sample: [0 0 0 1 0 0 0 0 0 0 1 1 1 1 0 0 0 0 1 1 1 0 0 0 0 0 0 1 0 0 0 0 0 0 0 1 1

0 0 0 0 0 0 1 0 0 0 0 0 0 1 1 0 0 0 1 1 1 1 0 0]

z obtained: [0.06069278 0.99998595]

Number: 1

Sample: [0 0 0 0 1 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 0 0 0 0 0 1 1 1 0 0 0 0 0 0 1 1
 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 0 0 0 0 0 0 0 1 0 0 0]

z obtained: [0.0607287   0.99998587]

Number: 5

Sample: [0 0 0 1 1 1 0 0 0 0 1 1 1 1 1 0 0 0 1 1 0 0 0 0 0 0 1 1 0 0 0 0 0 0 0 1 0
 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 0 0 0 0 0 1 1 0 0 0 0]

z obtained: [0.06069087 0.99998597]

Number: 0

Sample: [0 0 0 1 0 0 0 0 0 0 0 1 1 1 0 0 0 0 1 0 0 1 0 0 0 0 1 0 0 0 1 0 0 0 1 0 0
 0 1 0 0 0 1 0 0 1 1 0 0 0 1 1 0 1 0 0 0 0 0 1 1 0 0 0]

z obtained: [0.06071122 0.99998596]

Number: 0

Sample: [0 0 0 0 0 0 0 0 0 0 0 1 1 1 0 0 0 0 1 1 1 1 0 0 0 0 1 0 0 0 1 0 0 0 1 0 0
 0 1 0 0 0 1 0 0 1 1 0 0 0 1 1 0 1 0 0 0 0 0 1 1 1 0 0]

z obtained: [0.06069391 0.99998597]

Number: 5

Sample: [0 0 1 1 1 0 0 0 0 0 1 1 1 1 0 0 0 0 1 1 0 0 1 0 0 0 0 1 0 0 0 0 0 0 0 1 1
 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 1 0 0 0 0 0 1 1 1 0 0 0]

z obtained: [0.06070358 0.99998594]

Number: 1

Sample: [0 0 0 0 1 0 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1
 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 0 0 0]

z obtained: [0.06070395 0.9999859]

Number: 5

Sample: [0 0 0 0 1 0 0 0 0 0 1 1 1 1 0 0 0 1 1 1 0 0 1 0 0 0 1 1 0 0 0 0 0 0 0 1 0
 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 0 0 0 0 0 1 1 0 0 0 0]

z obtained: [0.06070437 0.99998596]

Number: 0

Sample: [0 0 0 0 1 0 0 0 0 0 1 1 1 1 0 0 0 0 1 1 0 0 0 0 0 0 1 0 0 0 1 0 0 0 1 0 0
 0 1 0 0 0 1 0 0 0 1 0 0 0 0 0 0 1 1 0 0 0 0 1 1 1 0 0]

z obtained: [0.06072645 0.99998595]

Number: 1

Sample: [0 0 0 1 1 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1
 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 0 0 0]

z obtained: [0.06067505 0.99998592]

Number: 0

Sample: [0 0 0 0 0 0 0 0 0 0 0 1 1 1 0 0 0 0 0 1 0 0 0 0 0 0 0 1 1 0 0 1 0 0 0 1 1 0
 0 1 0 0 0 1 0 0 1 1 0 0 0 1 0 0 1 0 0 0 0 0 1 1 1 0 0]

z obtained: [0.06072588 0.99998595]

Number: 1

Sample: [0 0 0 1 0 0 0 0 0 0 0 1 1 0 0 0 0 0 0 0 1 1 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1
 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 0 0 0 0 0 0 0 1 0 0 0]

z obtained: [0.06074379 0.99998584]

Number: 0

Sample: [0 0 0 0 0 0 0 0 0 0 0 1 1 1 0 0 0 0 1 1 0 0 0 0 0 0 0 1 0 0 1 0 0 0 1 1 0
 0 1 0 0 0 1 1 0 1 0 0 0 0 0 1 0 1 1 0 0 0 0 1 1 1 0 0]

z obtained: [0.06069789 0.99998597]

Number: 0

Sample: [0 0 0 0 1 0 0 0 0 0 0 1 1 1 0 0 0 0 1 1 0 1 0 0 0 0 1 1 0 0 1 0 0 0 1 1 0
 0 1 0 0 0 1 1 0 1 1 0 0 0 0 1 0 1 1 0 0 0 0 1 1 1 0 0]

z obtained: [0.06068564 0.99998598]

Number: 5

Sample: [0 0 0 1 1 0 0 0 0 0 0 1 1 1 0 0 0 0 0 1 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 1 0
 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 1 1 0 0 0]

z obtained: [0.06114992 0.99998554]

Number: 5

Sample: [0 0 0 1 0 1 0 0 0 0 1 1 1 1 1 0 0 0 0 1 0 0 0 0 0 0 0 1 1 0 0 0 0 0 0 0 1
0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 1 0 0 0 0 1 1 1 1 0 0]

z obtained: [0.06070639 0.99998593]

Number: 1

Sample: [0 0 0 1 0 0 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1
0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 0 0 0]

z obtained: [0.06067224 0.99998592]

Number: 0

Sample: [0 0 0 0 1 0 0 0 0 0 0 1 1 1 0 0 0 0 1 1 0 0 0 0 0 0 1 0 0 0 1 0 0 0 1 0 0
0 1 0 0 0 1 0 0 0 1 0 0 0 1 0 1 1 0 0 0 0 0 1 1 1 0 0]

z obtained: [0.06071177 0.99998596]

Number: 1

Sample: [0 0 0 1 1 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 1 0 0 0 0 0 0 0 1
0 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 0 0 0]

z obtained: [0.06069919 0.99998595]

Number: 5

Sample: [0 0 0 0 1 1 0 0 0 0 1 1 1 1 1 0 0 0 1 1 0 0 0 0 0 0 1 1 1 0 0 0 0 0 0 0 0 0
1 0 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 0 0 0 0 0 1 1 1 0 0]

z obtained: [0.06070915 0.99998596]

Number: 0

Sample: [0 0 0 0 0 0 0 0 0 0 0 0 1 1 1 0 0 0 0 1 1 0 1 0 0 0 0 1 0 0 0 1 0 0 0 1 1 0
0 1 0 0 0 1 1 0 0 1 0 0 0 1 0 0 0 1 0 0 0 0 1 1 1 0 0]

z obtained: [0.06070182 0.99998596]

Number: 5

Sample: [0 0 0 0 1 1 0 0 0 0 0 0 1 1 1 0 0 0 0 0 1 0 0 0 0 0 1 1 0 0 0 0 0 0 0 0 1 1 0
0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 0 0 0 0 0 1 1 1 0 0]

z obtained: [0.06070871 0.99998595]

Number: 1

Sample: [0 0 0 1 1 0 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1
0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 1 0 0]

z obtained: [0.06067783 0.99998595]

Number: 0

Sample: [0 0 0 0 1 0 0 0 0 0 0 1 1 1 0 0 0 0 1 1 0 0 1 0 0 0 1 0 0 0 1 0 0 0 1 0 0
0 1 0 0 0 1 0 0 0 1 0 0 0 1 0 0 1 1 0 0 0 0 1 1 1 0 0]

z obtained: [0.0607226   0.99998596]

Number: 1

Sample: [0 0 0 0 1 0 0 0 0 0 0 0 1 1 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 0 0 0 0 0 0 0 1 1
0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 1 1 0]

z obtained: [0.06070333 0.99998592]

Number: 0

Sample: [0 0 0 0 1 0 0 0 0 0 0 1 1 1 0 0 0 0 1 1 0 0 0 0 0 0 1 0 0 0 1 0 0 0 1 0 0
0 1 0 0 0 1 0 0 0 1 0 0 0 1 0 0 0 1 0 0 0 0 1 1 1 0 0]

z obtained: [0.06076327 0.99998593]

Number: 0

Sample: [0 0 0 1 0 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 1 0 0 0 0 0 1 0 0 1 0 0 0 1 0 0
0 1 0 0 0 1 0 0 0 1 0 0 0 0 1 0 0 1 0 0 0 0 1 1 1 1 0]

z obtained: [0.06069946 0.99998595]

Number: 0

Sample: [0 0 0 0 1 0 0 0 0 0 0 1 0 1 0 0 0 0 1 1 0 0 0 0 0 0 1 0 0 0 1 0 0 0 1 0 0
0 1 0 0 0 1 0 0 0 1 0 0 0 1 0 0 1 1 0 0 0 0 1 1 1 0 0]

z obtained: [0.06075562 0.99998593]

Number: 1

Sample: [0 0 0 0 1 0 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1
1 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 1 0 0]

z obtained: [0.06068387 0.99998597]

Number: 5

Sample: [0 0 0 0 1 1 0 0 0 0 1 1 1 1 0 0 0 0 1 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 1 0 0

0 0 0 0 0 0 1 1 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 1 0 0 0]

z obtained: [0.06093032 0.99998582]

Number: 1

Sample: [0 0 0 0 1 0 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 0 0 0 0 0 1 1 1
 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 1 0 0 0 0 1 1 1 0 0]

z obtained: [0.0606907   0.99998596]

Number: 5

Sample: [0 0 0 0 1 0 0 0 0 0 1 1 1 1 0 0 0 1 1 0 0 0 0 0 0 1 1 0 0 0 0 0 0 0 1 1 0
 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 1 1 0 0 0]

z obtained: [0.06080142 0.99998591]

Number: 1

Sample: [0 0 0 0 0 1 0 0 0 0 0 0 0 0 1 1 0 0 0 0 0 1 1 1 0 0 0 1 1 1 1 0 0 0 0 1 1 1
 1 0 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 1 0 0 0 0 0 0 1 1 0]

z obtained: [0.06068974 0.99998597]

Number: 5

Sample: [0 0 0 1 0 0 0 0 0 0 0 1 1 1 0 0 0 0 1 0 0 0 0 0 0 0 1 1 1 1 0 0 0 0 0 1 0
 1 1 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 1 0 0 0 0 1 1 1 0 0]

z obtained: [0.06085501 0.99998591]

Number: 5

Sample: [0 0 0 0 0 0 0 0 0 0 1 1 1 1 0 0 0 0 0 1 0 0 0 0 0 0 1 0 0 0 0 0 0 0 1 1 1
 1 0 0 0 0 0 0 0 1 1 0 0 0 0 0 0 0 1 0 0 0 1 1 1 1 0 0]

z obtained: [0.06073771 0.99998594]

Number: 0

Sample: [0 0 0 1 1 0 0 0 0 0 0 1 1 1 0 0 0 0 1 1 0 1 1 0 0 0 1 0 0 0 1 0 0 0 1 0 0 0
 0 1 0 0 0 1 0 0 0 1 0 0 0 1 1 0 1 0 0 0 0 1 1 1 1 0 0]

z obtained: [0.06068711 0.99998597]

Number: 1

Sample: [0 0 0 0 0 1 0 0 0 0 0 0 0 0 1 1 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 0 0 0 0 1 1 1
 1 0 0 0 0 0 0 1 1 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 1 1 0]

z obtained: [0.0607428   0.99998593]

Number: 5

Sample: [0 0 0 0 0 0 0 0 0 0 0 1 1 1 0 0 0 0 1 0 0 0 0 0 0 0 1 1 1 1 0 0 0 0 1 0 0
 0 1 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 1 0 0 0 0 1 1 1 0 0]

z obtained: [0.06097687 0.99998586]

Number: 5

Sample: [0 0 0 1 1 1 0 0 0 0 1 1 1 1 0 0 0 0 1 0 0 0 0 0 0 0 1 1 1 1 0 0 0 0 1 1 1
 1 1 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 1 1 0 0 0 0 1 1 1 0 0]

z obtained: [0.06068905 0.99998597]

Number: 5

Sample: [0 0 0 0 0 0 0 0 0 0 0 1 1 1 1 0 0 0 0 1 0 0 0 0 0 0 0 1 1 1 1 0 0 0 0 1 1 0
 1 1 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 1 0 0 0 0 1 1 1 1 0]

z obtained: [0.06073595 0.99998595]

Number: 5

Sample: [0 0 0 1 1 0 0 0 0 0 1 1 1 1 0 0 0 0 1 0 0 0 0 0 0 0 1 1 1 1 0 0 0 0 0 0 0
 1 1 0 0 0 0 0 0 0 1 0 0 0 1 0 0 1 1 0 0 0 1 1 1 1 0 0]

z obtained: [0.06069776 0.99998597]

Number: 1

Sample: [0 0 0 0 0 1 0 0 0 0 0 0 0 1 1 0 0 0 0 0 1 1 1 0 0 0 1 1 1 1 1 0 0 0 1 1 0
 1 1 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 0]

z obtained: [0.06070136 0.99998597]

Number: 5

Sample: [0 0 0 0 0 1 0 0 0 0 1 1 1 1 1 0 0 0 1 1 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 1
 0 0 0 0 0 0 0 1 1 0 0 0 0 1 1 1 0 0 0 0 1 1 1 0 0 0]

z obtained: [0.06068766 0.99998597]

Number: 5

Sample: [0 0 0 0 0 1 1 0 0 0 1 1 1 1 1 0 0 0 1 1 0 0 0 0 0 0 1 1 1 0 0 0 0 0 0 0 1
 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 1 1 0 0 0 0 1 1 1 0 0 0]

z obtained: [0.06069477 0.99998597]

Number: 1

Sample: [0 0 0 1 1 1 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1
1 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 1 0 0 0 0 1 1 1 1 1 0 0]

z obtained: [0.06068335 0.99998598]

Number: 1

Sample: [0 0 0 0 0 0 0 0 0 0 0 1 1 1 0 0 0 0 1 1 1 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 1
0 0 0 0 0 1 1 1 1 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 1 1 0 0]

z obtained: [0.06068583 0.99998597]

Number: 0

Sample: [0 0 0 1 1 0 0 0 0 0 1 1 1 1 0 0 0 0 1 0 0 1 0 0 0 0 1 0 0 0 1 0 0 0 1 0 0
0 1 0 0 0 1 0 0 0 1 0 0 0 1 1 1 1 1 0 0 0 0 1 1 1 0 0]

z obtained: [0.06068745 0.99998597]

Number: 0

Sample: [0 0 0 1 0 0 0 0 0 0 0 1 1 0 0 0 0 0 1 1 0 1 0 0 0 0 1 0 0 1 1 0 0 0 1 0 0
0 1 0 0 0 1 0 0 0 1 0 0 0 1 1 1 1 1 0 0 0 0 1 1 1 0 0]

z obtained: [0.0606903   0.99998597]

Number: 5

Sample: [0 0 0 0 0 0 0 0 0 0 0 1 1 1 1 1 0 0 0 1 1 0 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1
1 0 0 0 0 0 0 0 1 1 0 0 0 0 1 0 1 1 0 0 0 0 1 1 1 1 0 0]

z obtained: [0.06069504 0.99998597]

Number: 5

Sample: [0 0 0 0 1 1 1 0 0 0 0 1 1 1 1 0 0 0 0 1 0 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 1
0 0 0 0 0 1 0 0 1 0 0 0 0 0 0 1 1 0 0 0 0 0 1 1 0 0 0]

z obtained: [0.06068812 0.99998597]

Number: 5

Sample: [0 0 0 0 0 0 0 0 0 0 0 1 1 1 1 0 0 0 0 1 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 1 1
1 1 0 0 0 0 0 0 0 1 0 0 0 0 0 0 1 1 0 0 0 0 1 1 1 1 0 0]

z obtained: [0.06080006 0.99998591]

Number: 5

Sample: [0 0 0 0 0 0 0 0 0 0 1 1 1 1 0 0 0 0 1 1 0 0 0 0 0 0 1 1 1 0 0 0 0 0 0 0 1
1 0 0 0 0 0 0 0 1 0 0 0 0 0 1 1 1 0 0 0 0 1 1 1 0 0 0]

z obtained: [0.06071161 0.99998596]

Number: 1

Sample: [0 0 0 0 0 0 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1
1 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 1 0 0]

z obtained: [0.06068449 0.99998597]

Number: 5

Sample: [0 0 0 0 0 0 0 0 0 0 1 1 1 1 1 0 0 0 0 1 0 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1
1 1 0 0 0 0 0 0 0 1 0 0 0 0 0 0 1 0 0 0 0 1 1 1 0 0 0]

z obtained: [0.06072319 0.99998593]

Number: 1

Sample: [0 0 0 0 0 0 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 1 0 0 0 0 0 0 1 1
1 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 1 0 0 0 0 0 0 1 0 0 0]

z obtained: [0.0606865   0.99998597]

Number: 0

Sample: [0 0 0 1 0 0 0 0 0 0 1 1 1 1 0 0 0 0 1 1 0 1 0 0 0 0 1 1 0 0 1 0 0 0 1 0 0
0 1 0 0 0 1 0 0 0 1 0 0 0 1 1 0 1 0 0 0 0 0 1 1 1 0 0]

z obtained: [0.06069002 0.99998597]

Number: 0

Sample: [0 0 0 0 1 0 0 0 0 0 0 1 1 1 0 0 0 0 1 1 0 1 1 0 0 0 1 0 0 0 1 0 0 0 1 0 0
0 1 0 0 0 1 0 0 0 1 0 0 0 1 1 0 1 1 0 0 0 0 1 1 1 0 0]

z obtained: [0.06069217 0.99998597]

Number: 0

Sample: [0 0 0 1 1 0 0 0 0 0 0 1 1 1 0 0 0 0 1 1 0 0 1 0 0 0 1 1 0 0 1 0 0 0 1 0 0
0 1 0 0 0 1 1 0 0 1 0 0 0 1 1 0 1 0 0 0 0 0 1 1 1 0 0]

z obtained: [0.06068813 0.99998597]

Number: 0

Sample: [0 0 0 1 0 0 0 0 0 0 0 1 1 0 0 0 0 0 1 1 0 1 0 0 0 0 1 0 0 1 0 0 0 0 1 0 0

0 1 0 0 0 1 1 0 0 1 0 0 0 1 0 0 1 1 0 0 0 0 1 1 1 0 0]

z obtained: [0.06070291 0.99998597]

Number: 5

Sample: [0 0 0 1 1 1 1 0 0 0 1 1 1 1 1 0 0 0 1 1 0 0 0 0 0 0 1 1 1 1 0 0 0 0 0 0 1
1 0 0 0 0 0 0 0 1 0 0 0 0 1 1 0 1 0 0 0 0 1 1 1 1 0 0]

z obtained: [0.0606847   0.99998598]

Number: 1

Sample: [0 0 0 1 1 0 0 0 0 0 0 1 1 1 1 0 0 0 0 1 1 1 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1
1 0 0 0 0 0 1 1 1 0 0 0 0 1 1 1 0 0 0 0 0 1 1 1 0 0 0 0 1 1 1 0 0 0]

z obtained: [0.06068252 0.99998598]

Number: 1

Sample: [0 0 0 1 0 0 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 1 0 0 0 0 0 0 0 1 1
1 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 1 0 0 0 0 1 1 1 0 0]

z obtained: [0.06068339 0.99998597]

Number: 5

Sample: [0 0 0 1 0 0 0 0 0 0 1 1 1 1 1 0 0 0 1 1 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 1 1
0 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 0 0 0 0 0 0 0 1 1 0 0 0]

z obtained: [0.06075836 0.99998592]

Number: 5

Sample: [0 0 1 1 1 1 0 0 0 0 0 1 1 1 1 0 0 0 0 1 0 0 0 0 0 0 1 1 0 0 0 0 0 0 0 1 0
0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 1 1 0 0 0]

z obtained: [0.0607351   0.99998592]

Number: 0

Sample: [0 0 0 0 1 0 0 0 0 0 0 0 1 1 1 0 0 0 0 1 1 0 0 0 0 0 0 1 0 0 0 1 0 0 0 1 0 0
0 1 0 0 0 1 0 0 1 1 0 0 0 1 0 1 1 0 0 0 0 0 1 1 0 0 0]

z obtained: [0.06071288 0.99998596]

Number: 1

Sample: [0 0 0 0 0 0 0 0 0 0 0 1 1 1 0 0 0 0 0 0 1 1 0 0 0 0 0 1 1 1 0 0 0 0 0 0 1 1
1 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 1 0 0 0 0 1 1 1 1 0]

z obtained: [0.06068714 0.99998597]

Number: 5

Sample: [0 0 0 0 1 0 1 0 0 0 0 1 1 1 1 0 0 0 1 1 1 1 0 0 0 0 1 0 0 0 0 0 0 0 1 1 1
 0 0 0 0 0 0 1 1 1 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 0 0]

z obtained: [0.06068514 0.99998597]

Number: 5

Sample: [0 0 0 1 0 0 0 0 0 0 1 1 1 1 1 0 0 0 1 0 0 0 0 0 0 0 1 1 0 0 0 0 0 0 0 1 1
 0 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 0 0 0]

z obtained: [0.0607531   0.99998594]

Number: 5

Sample: [0 0 0 1 0 1 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 1
 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 1 1 0 0 0]

z obtained: [0.06067223 0.99998574]

Number: 5

Sample: [0 0 0 0 0 0 1 0 0 0 1 1 1 1 1 0 0 0 1 1 1 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 0
 0 0 0 0 0 0 1 1 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 1 1 0 0 0]

z obtained: [0.06070669 0.99998596]

Number: 1

Sample: [0 0 0 0 0 1 1 0 0 0 1 1 1 1 1 0 0 0 0 1 1 1 1 0 0 0 0 0 1 1 1 0 0 0 0 0 1
 1 1 0 0 0 0 1 1 1 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 0 0 0]

z obtained: [0.06068411 0.99998598]

Number: 1

Sample: [0 0 0 0 1 0 0 0 0 0 0 1 1 1 0 0 0 0 1 1 1 1 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1
 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 0 0 0]

z obtained: [0.06068335 0.99998595]

Number: 1

Sample: [0 0 0 0 0 0 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1
 1 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 1 0 0]

z obtained: [0.06068569 0.99998597]

Number: 1

Sample: [0 0 0 0 0 0 0 0 0 0 0 1 1 1 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 0 0 0]

z obtained: [0.06074797 0.9999859]

Number: 5

Sample: [0 0 0 0 1 1 0 0 0 0 0 1 1 1 1 0 0 0 1 1 0 0 0 0 0 0 1 0 0 0 0 0 0 0 1 1 1 1 0 0 0 0 0 1 1 1 0 0 0 0 0 0 0 1 0 0 0 0 0 1 1 1 0 0]

z obtained: [0.06069073 0.99998597]

Number: 0

Sample: [0 0 0 0 1 0 0 0 0 0 1 1 1 1 0 0 0 0 1 1 0 1 1 0 0 0 1 0 0 0 1 0 0 0 1 0 0 0 1 0 0 0 1 1 0 0 1 0 0 0 1 1 1 1 0 0 0 0 0 1 1 1 0 0]

z obtained: [0.06068551 0.99998598]

Number: 1

Sample: [0 0 0 0 0 0 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 1 0 0 0 0 1 1 1 1 0 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 1 1 0]

z obtained: [0.06068537 0.99998597]

Number: 5

Sample: [0 0 0 0 1 1 1 0 0 0 0 1 1 1 1 0 0 0 1 1 1 0 0 0 0 0 1 0 0 0 0 0 0 0 1 1 1 1 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 0 0 0 0 0 1 1 0 0 0]

z obtained: [0.06069158 0.99998597]

Number: 5

Sample: [0 0 0 1 0 0 0 0 0 0 0 1 1 1 1 0 0 0 1 0 0 0 1 0 0 0 1 1 0 0 0 0 0 0 1 1 1 0 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 0 0 0 0 0 0 1 1 0 0 0]

z obtained: [0.0607496   0.99998594]

Number: 1

Sample: [0 0 0 0 0 0 0 0 0 0 0 1 1 1 0 0 0 1 1 1 1 0 0 0 0 1 1 1 0 0 0 0 0 1 1 1 1 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 0 0]

z obtained: [0.06069223 0.99998596]

Number: 0

Sample: [0 0 0 1 1 1 0 0 0 0 0 1 1 1 0 0 0 0 1 1 0 0 1 0 0 0 1 1 0 0 1 0 0 0 1 0 0 0 1 0 0 1 1 0 0 0 1 1 1 1 0 0 0 0 0 1 1 1 0 0]

z obtained: [0.06068565 0.99998598]

Number: 5

Sample: [0 0 0 0 1 1 1 0 0 0 0 1 1 1 1 0 0 0 0 1 0 0 0 0 0 0 1 1 0 0 0 0 0 0 0 1 1 1 1 0 0 0 0 0 0 1 1 0 0 0 0 0 0 0 1 0 0 0 0 0 1 1 1 0 0]

z obtained: [0.06069442 0.99998597]

Number: 0

Sample: [0 0 0 0 1 0 0 0 0 0 1 1 1 1 0 0 0 0 1 0 0 1 0 0 0 0 1 0 0 0 1 0 0 0 1 1 0 0 1 0 0 0 1 1 0 0 1 0 0 0 1 1 0 1 1 0 0 0 0 1 1 1 0 0]

z obtained: [0.06068722 0.99998597]

Number: 1

Sample: [0 0 0 0 1 0 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 0 0 0 0 0 0 0 1 1 0 0 0 0 0 1 1 0 0 0 0 0 0 1 0 0 0 0 0 0 0 1 1 0 0 0]

z obtained: [0.06067586 0.99998585]

Number: 0

Sample: [0 0 0 0 1 0 0 0 0 0 0 1 1 1 0 0 0 0 1 1 0 0 0 0 0 0 1 1 0 0 0 0 0 0 0 1 0 0 0 1 0 0 0 1 1 0 0 1 0 0 0 0 1 0 0 1 0 0 0 0 1 1 1 0 0]

z obtained: [0.06071096 0.99998596]

Number: 0

Sample: [0 0 0 0 1 0 0 0 0 0 1 1 1 1 0 0 0 0 1 1 0 1 0 0 0 0 1 1 0 0 1 0 0 0 1 1 0 0 1 0 0 0 1 1 0 1 1 0 0 0 1 1 1 1 0 0 0 0 0 1 1 1 0 0]

z obtained: [0.06068429 0.99998598]

Number: 5

Sample: [0 0 0 0 0 1 0 0 0 0 1 1 1 1 1 0 0 0 1 1 0 0 0 0 0 0 1 1 0 0 0 0 0 0 0 1 1 0 0 0 0 0 0 0 1 1 0 0 0 0 0 0 0 1 1 0 0 0 0 0 1 1 0 0 0]

z obtained: [0.06070436 0.99998596]

Number: 5

Sample: [0 0 0 0 0 1 1 0 0 0 1 1 1 1 1 0 0 0 1 1 1 0 0 0 0 0 1 0 0 0 0 0 0 0 1 1 1

0 0 0 0 0 0 0 1 1 0 0 0 0 0 1 1 0 0 0 0 0 1 1 0 0 0 0]

z obtained: [0.06068905 0.99998597]

Number: 5

Sample: [0 0 0 0 0 1 1 1 0 0 1 1 1 1 1 0 0 0 0 1 1 0 0 0 0 0 0 1 1 0 0 0 0 0 0 0 1

1 0 0 0 0 0 0 0 1 0 0 0 0 0 0 1 1 0 0 0 0 0 1 1 0 0 0]

z obtained: [0.06069448 0.99998596]

Number: 0

Sample: [0 0 0 0 1 0 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 1 0 0 0 0 0 1 0 0 0 0 0 0 0 1 0 1

0 1 0 0 0 1 1 0 0 1 0 0 0 0 1 0 1 1 0 0 0 0 1 1 1 0 0]

z obtained: [0.06068437 0.99998597]

Number: 5

Sample: [0 0 0 0 0 1 1 0 0 0 1 1 1 1 0 0 0 0 1 1 0 0 0 0 0 0 1 1 0 0 0 0 0 0 0 0 1 1

0 0 0 0 0 0 0 1 1 0 0 0 0 0 0 0 1 1 0 0 0 0 0 1 1 0 0]

z obtained: [0.06070894 0.99998596]

Number: 0

Sample: [0 0 0 0 1 0 0 0 0 0 0 1 1 1 0 0 0 0 1 1 0 0 0 0 0 0 1 0 0 0 1 0 0 0 1 0 0 0

0 1 0 0 0 1 1 0 0 1 0 0 0 0 1 0 1 0 0 0 0 0 1 1 1 0 0]

z obtained: [0.06070798 0.99998596]

Number: 1

Sample: [0 0 0 1 0 0 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 1 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1

1 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 1 0 0]

z obtained: [0.06068505 0.99998597]

Number: 0

Sample: [0 0 0 0 0 0 0 0 0 0 0 1 1 0 0 0 0 0 1 1 0 1 0 0 0 0 1 0 0 1 1 0 0 0 1 0 0

1 1 0 0 0 1 0 0 0 1 0 0 0 1 1 0 0 1 0 0 0 0 1 0 1 1 0]

z obtained: [0.06070781 0.99998597]

Number: 5

Sample: [0 0 0 0 1 1 0 0 0 0 0 1 1 1 1 0 0 0 1 1 1 0 0 0 0 0 1 1 1 1 0 0 0 0 0 0 0

1 0 0 0 0 0 0 0 1 0 0 0 0 0 0 1 1 0 0 0 0 0 1 1 0 0 0]

z obtained: [0.06070015 0.99998597]

Number: 1

Sample: [0 0 0 1 1 0 0 0 0 0 1 1 1 1 0 0 0 0 0 1 1 1 0 0 0 0 1 1 1 0 0 0 0 1 1 1 0 0 0 0 1 1 1 1 0 0 0 0 1 1 1 0 0 0 0 0 1 1 1 0 0 0 1 1 1 1 0 0]

z obtained: [0.06068353 0.99998598]

Number: 5

Sample: [0 0 0 0 1 1 0 0 0 0 0 1 1 1 1 0 0 0 1 0 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 1 0 0 0 0 0 0 0 1 1 0 0 0 0 0 1 0 1 0 0 0 0 0 1 1 1 0 0]

z obtained: [0.06069956 0.99998597]

Number: 5

Sample: [0 0 1 0 1 1 0 0 0 0 1 1 1 1 1 0 0 0 1 1 0 0 0 0 0 0 1 1 1 0 0 0 0 0 1 0 0 1 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 1 0 0 0 0 1 1 1 1 0 0]

z obtained: [0.06069102 0.99998597]

Number: 1

Sample: [0 0 0 0 0 1 0 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 0 0 0 0 0 1 1 1 1 0 0 0 1 1 0 1 0 0 0 0 1 0 1 1 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 0 0]

z obtained: [0.06069337 0.99998597]

Number: 5

Sample: [0 0 0 0 1 1 1 0 0 0 1 1 1 0 0 0 0 0 1 0 0 0 0 0 0 0 1 1 1 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 1 0 0 0 0 0 0 1 0 0 0 0 0 1 1 0 0 0 1 1 0 0]

z obtained: [0.06080579 0.99998592]

Number: 1

Sample: [0 0 0 0 0 0 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 0 0 0 0 0 1 1 0 0 0 0 0 1 1 1 0 0 0 0 1 1 1 1 0 0 0 0 1 1 1 1 0 0 0 0 0 0 1 1 0 0]

z obtained: [0.06068599 0.99998596]

Number: 5

Sample: [0 0 1 1 1 1 0 0 0 0 1 1 1 1 0 0 0 0 1 0 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 1 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 1 1 0 0 0 0 1 1 1 1 0 0]

z obtained: [0.06069267 0.99998597]

Correctly classified: 33.2191780822