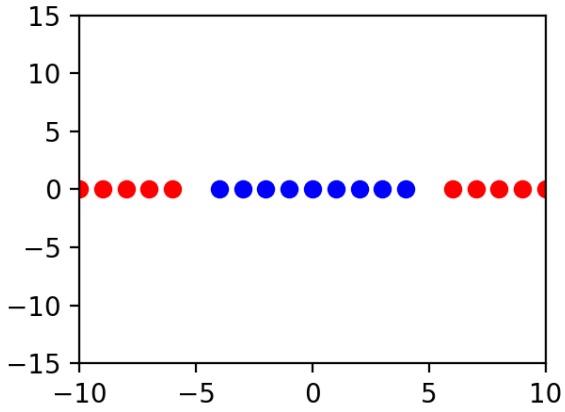
# Homework Week 8

1) Consider the following dataset in 1-D where the color represents the class, what methods can you use to theoretically classify the data with perfect accuracy




In the context of a Nerul network the sigmoid function is called a

A. Probability distribution
B. Log function
C. Activation function
D. None of the above

you will need the following class for the next several questions

```
class Net(nn.Module):
        def __init__(self,D_in,H,D_out):
            super(Net,self).__init__()
             self.linear1=nn.Linear(D_in,H)
             self.linear2=nn.Linear(H,D_out)
          def forward(self,x):
             x=sigmoid(self.linear1(x))
             x=sigmoid(self.linear2(x))
             return x
```

2) How many hidden layers are in the network class Net

A. 0
B. 1
C. 2
D. 3

3) What is the activation function used

A. Relu
B. Tanh
C Sigmoid
D. None of the above

4) Consider the class **Net** we create the following object **model** model=Net(2,3,1) how many neurons dose the model have

A. 1
B. 2
C. 3
D. 4

5) What loss function would you use to train the model

A. nn.CrossEntropyLoss()
B. nn.BCELoss()
C. nn.MSELoss()
D. None of the above

6) You create a neural network classifier with a training accuracy of 50% and testing accuracy of 25% select the best solution to improve your training accuracy ?

A. Use a linear classifier
B. Use less hidden neurons
C. Use more hidden neurons
D. Use more layers in the output layer

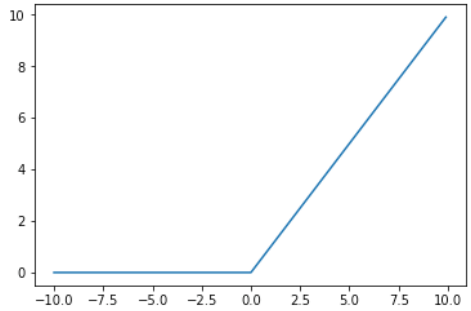
7) What loss function do you use to train the following neural network class for classification?

```
class Net(nn.Module):
    def __init__(self,D_in,H,D_out):
        super(Net,self).__init__()
        self.linear1=nn.Linear(D_in,H)
        self.linear2=nn.Linear(H,D_out)
    def forward(self,x):
        x=sigmoid(self.linear1(x))
        x=sigmoid(self.linear2(x))
```

```
        return x
```

A. nn.CrossEntropyLoss()
B. nn.BCELoss()
C. nn.MSELoss()
D. None of the above

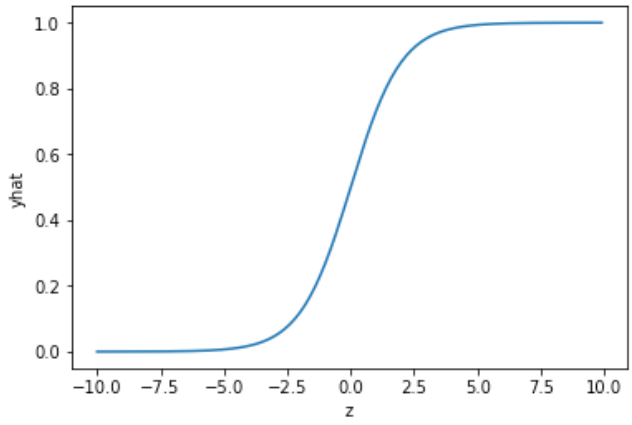
8) What is the following function called?



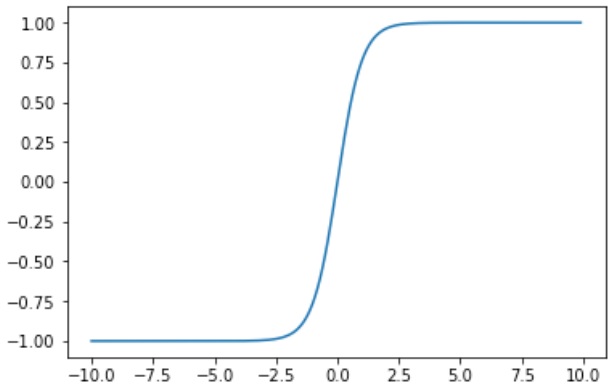

A. Relu
B. Tanh
C Sigmoid
D. None of the above

9) What is the correct plot for the following function $max(0, z)$

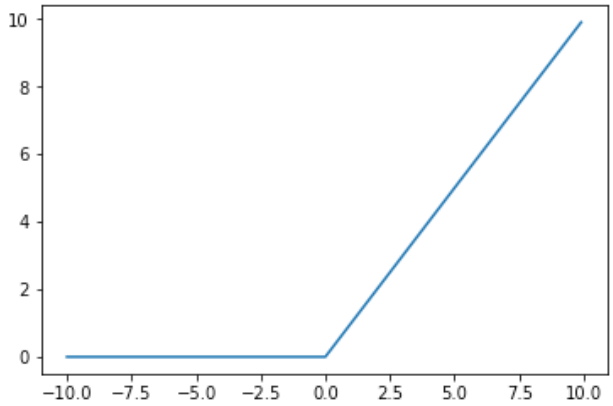
A




B




C




D None of the above

10 ) What activation function do you use for the output layer of a multi-class neural network in question 7 for classification

A. Relu
B. Tanh
C Sigmoid
D. Linear

Solutions

1. A,C
2. B
3. C
4. C
5. B
6. C

7. A
8. A
9. C
10. D