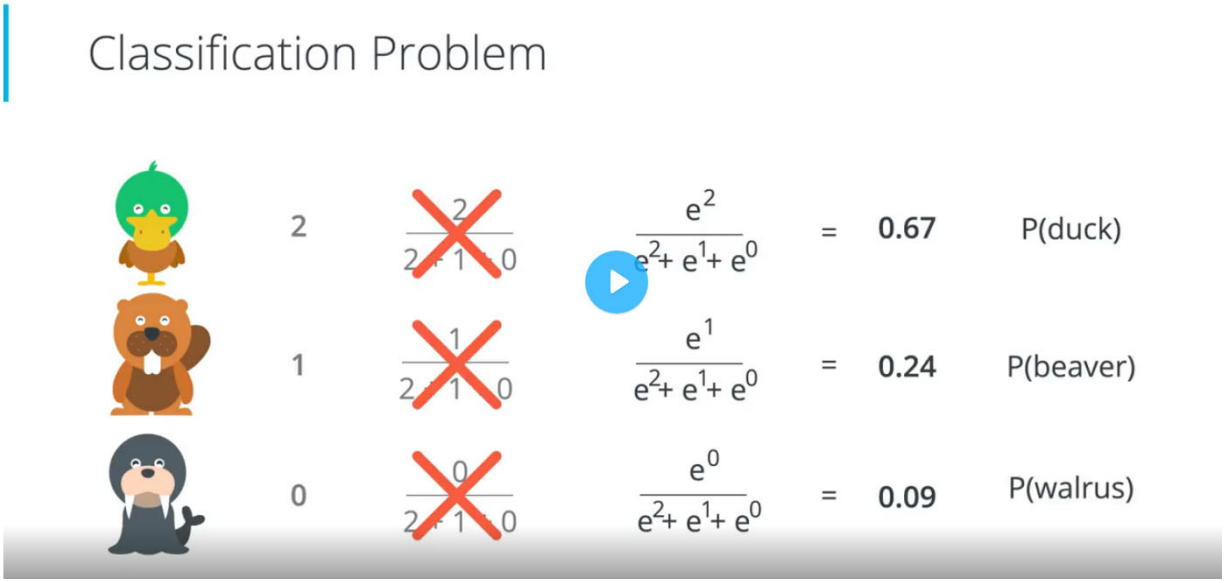
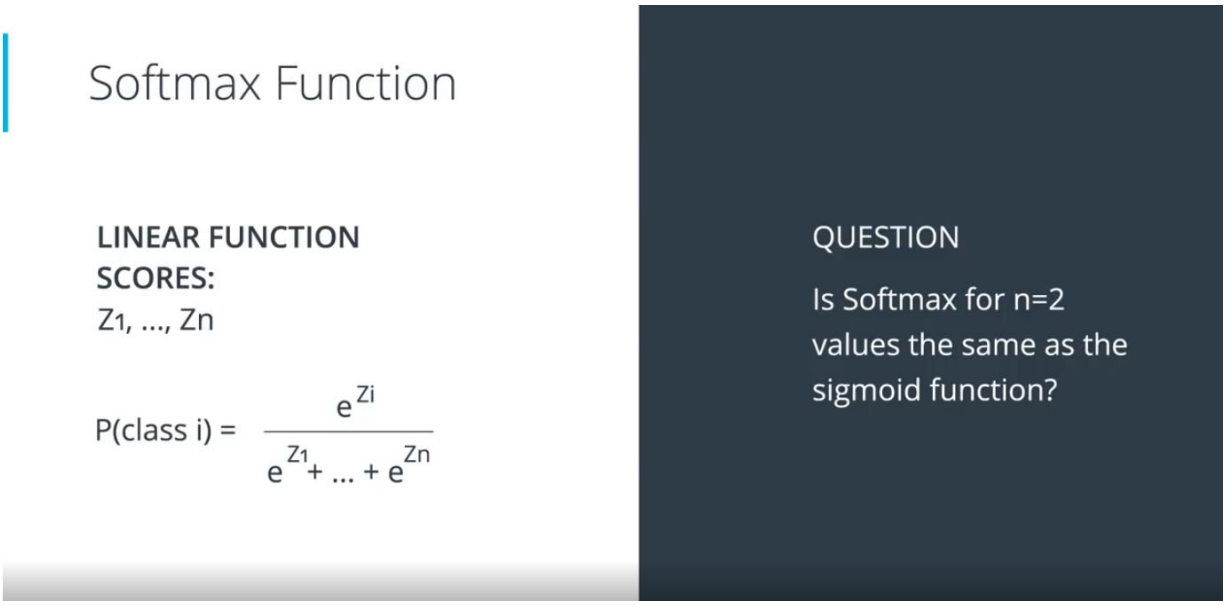
DL 18 S Softmax





In [1]:
```
import numpy as np
import math

# Write a function that takes as input a list of numbers, and returns
# the list of values given by the softmax function.
def softmax(L):
    softOutput = []
    x = 0
    denom = sum([x + math.exp(i) for i in L])
    for i in L:
        softOutput.append(math.exp(i)/denom)
    return softOutput
```

In [2]:
```
L = [2,1,0]
softmax(L)
```

Out[2]: [0.6652409557748219, 0.24472847105479764, 0.09003057317038046]

In [3]:
```
import numpy as np

# Write a function that takes as input a list of numbers, and returns
# the list of values given by the softmax function.
def softmax(L):
    softOutput = []
    x = 0
    denom = sum([x + np.exp(i) for i in L])
    for i in L:
        softOutput.append(np.exp(i)/denom)
    return softOutput
```

In [4]:
```
L = [2,1,0]
softmax(L)
```

Out[4]: [0.6652409557748219, 0.24472847105479764, 0.09003057317038046]

In [5]:
```
np.exp(L)
```

Out[5]: array([7.3890561 , 2.71828183, 1.   ])

In [6]:
```
import numpy as np

def softmax(L):
    expL = np.exp(L)
    sumExpL = sum(expL)
    result = []
    for i in expL:
        result.append(i*1.0/sumExpL)
    return result


# Note: The function np.divide can also be used here, as follows:
def softmax1(L):
    expL = np.exp(L)
    return np.divide (expL, expL.sum())
```

In [7]:
```
l = [2,1,0]
softmax(L)
```

Out[7]: [0.6652409557748219, 0.24472847105479764, 0.09003057317038046]