Lesson 10 (Softmax)

(a) Write a Python function that implements the softmax function. Vectorize your code for efficiency. Write your code so that it does not numerically overflow for large inputs.

(b) Check that the output values of your softmax function are always:
   (i) between zero and one
   (ii) sum to one

   Do this by generating random inputs of various lengths.

(c) Describe what happens to the output values of the softmax function when the input values are large positive and unequal.

(d) Describe what happens to the output values of the softmax function when the input values are small positive and unequal.

(e) Describe what happens to the output values of the softmax function when the input values are large positive and large negative values.

(f) Describe what happens to the output values of the softmax function when the input values are small positive and small negative values.