Numpy

Numpy is a very powerfull library that takes on its back almost all computing tasks needed for Machine Learning, from vector and matrix operations to solving optimization problems. Usually, all formulas in every algorithm are implemented in NumPy or using another library named scipy. In this homework, I invite you to write some python functions using NumPy to practice more the maths to NumPy conversion, which will be useful to you in the Research and Development projects at Sigmoid:

Formula No. 1: Sigmoid Function.
The name of the organization comes from an activation function - Sigmoid. The sigmoid function is used when you need to convert real numbers into probabilities, or from a -∞ to +∞ range into 0 to 1 range, it's formula is the following:

$$\sigma(y) = \frac{1}{1 + e^{-y}}$$

Formula No. 2: ICOTE sample generation function.
One of the libraries developed by Sigmoid is Crucio, you will learn about it later during our mentorship. All algorithms from crucio are generating synthetic samples. They use for it usually different ideas. In this task, I invite you to create a function that will generate a new sample using 2 samples and the ICOTE algorithm.

$$\alpha = 1 / distance(x_1, x_2)$$
$$X_{new} = x_1 + \alpha \times (x_1 - x_2)$$

In the formula above distance represents the distance between the vectors x1 and x2.
Your task: Implement in python using NumPy the formula above as a function which will take the following parameters:
- x1: a NumPy 1-d array.
- x2: a NumPy 1-d array.
- *** distance(x1 : array, x2: array) = Euclidean Distance (search for it :))**