**In this project we have divided the work into four sections as described in the project handout. Also, we have divided each section into two parts: first is the Branin function, and the second is LDA and SVM.**

**Section 1: Data visualization**

* Part 1: Branin Function:
* The following figure shows a heatmap of the Branin function over the domain that resulted in image as follows:

A close up of a logo

Description automatically generated

* As it can be seen in the following figure, which is the same above figure, but with different angle, that the behavior of the function is not stationary. It is more like a paper flipped 45o from both sides where most of the data dense is not residing in any specific region.

A picture containing text

Description automatically generated

* One of the possible transformation for this function is a logarithmic transformation where most of the data dense is in one level while few parts are pointing down as shown in the following figure:

**A picture containing accessory, umbrella

Description automatically generated**

* Part 2: LDA and SVM: