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Part 1 Part A:

1. We determined that the Big(o) was n2
2. We first ran our program with random restart with a range of 3 to 80. We then used our formula to predict what the values would be for 90, 100, and 110. The predicted values and actual values are below:

|  |  |  |  |
| --- | --- | --- | --- |
| **Values** | **Predicted Values** | **Actual Values** | **Percent of Error** |
| 90 | 3.22 | 3.4 | -6.3953% |
| 100 | 3.39 | 4.4 | -22.9545% |
| 110 | 3.56 | 6.3 | -43.4921% |

As you can see from our percent of error, our predictions were not entirely accurate. We got the closest with our guess for 90.

Part 1 Part B:

From the data we determined that running hill climb without the random restart resulted in an 88% accuracy rate. This almost matches the 90% accuracy that Dr. Guinn predicted.

With an accuracy of 88%, we have concluded that the degree of optimality does not necessarily grow harder as the value of n changes.