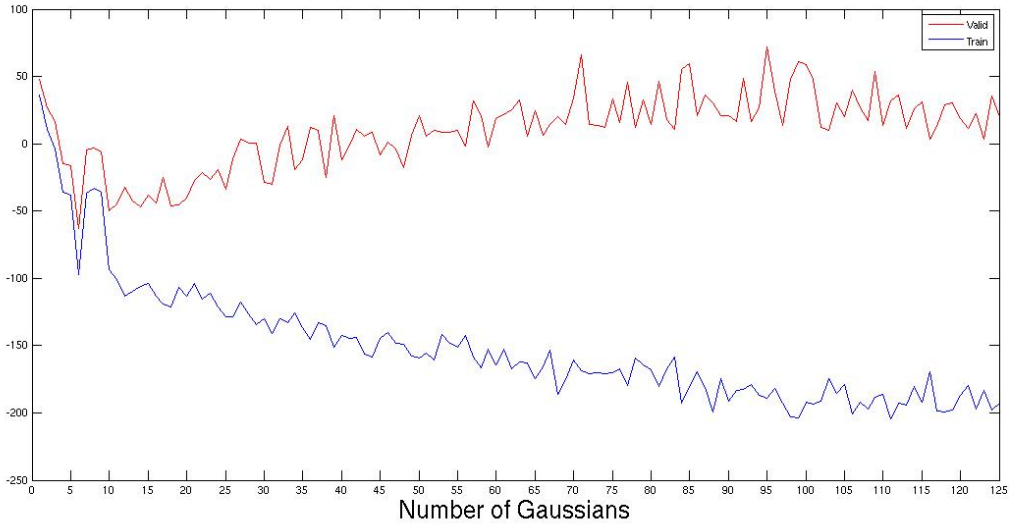
Part 1

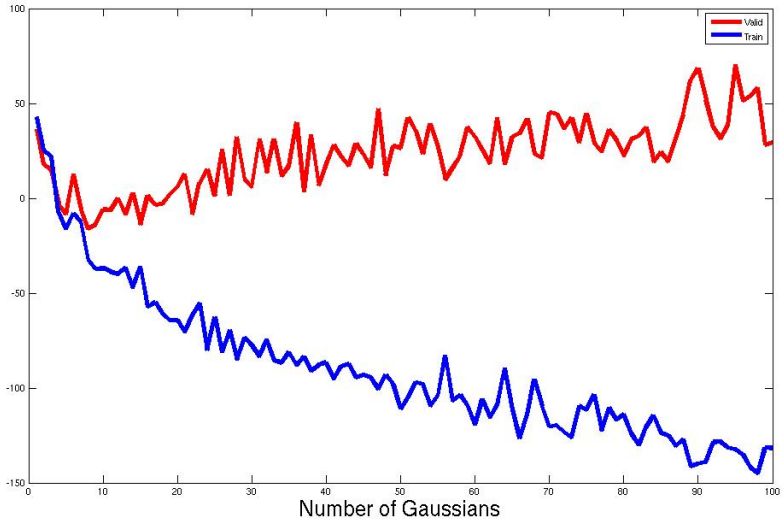


Used mogem(10,num,0.1,0) for num = 1 to 125 (5x25)

Shows that the global min is at 6 meaning we are 1 over the number of gaussians. This means that we have a certain amount of test cases that are making itself a new test class (i.e we need to make a new test class to cover those test cases), so having 6 gaussians was better than 5 even tho we used 5.

changing Stdev means that we will allow more results to be correct thus changing the log probs (making them smaller). This will allow for a new global minimum due to leaving more room for error.

Part 2



Used mogem(10,num,0.1,0) from 1 to 100 (10x10)

Global min at 8

Since we have more Test cases we needed more gaussians circles to fit them.
given that we were off by +1 for part 1 and we are now off by -2 for part 2, This means that Part 1 had a closer approximation to the actual gaussian whereas in Part 2 we used less than was needed meaning that the circles needed to circle every gaussian can be approximated better with less gaussians meaning overlapping test cases. In part 1 we went over meaning that each of the 25 test cases in the 5 gaussians could not be approximated in 5 but needed to use 1 more to approximate it better.

Part 3

[0.25,0.25,0.25,0.25]:
mogem(10,4,0.1,0, [0.25,0.25,0.25,0.25]) gave [0.1974,0.2803,0.2976,0.2247]

[0.3, 0.2, 0.2, 0.3]:
mogem(10,4,0.1,0, [0.3, 0.2, 0.2, 0.3]) gave [0.1995,0.2803,0.2930,0.2272]

[0.2, 0.3, 0.3, 0.2]:
mogem(10,4,0.1,0, [0.2, 0.3, 0.3, 0.2]) gave [0.1955,0.2803,0.3019,0.2223]

[0.9, 0.05, 0.025, 0.025]:
mogem(10,4,0.1,0, [0.9, 0.05, 0.025, 0.025]) gave [0.2576,0.2724,0.2450,0.2249]