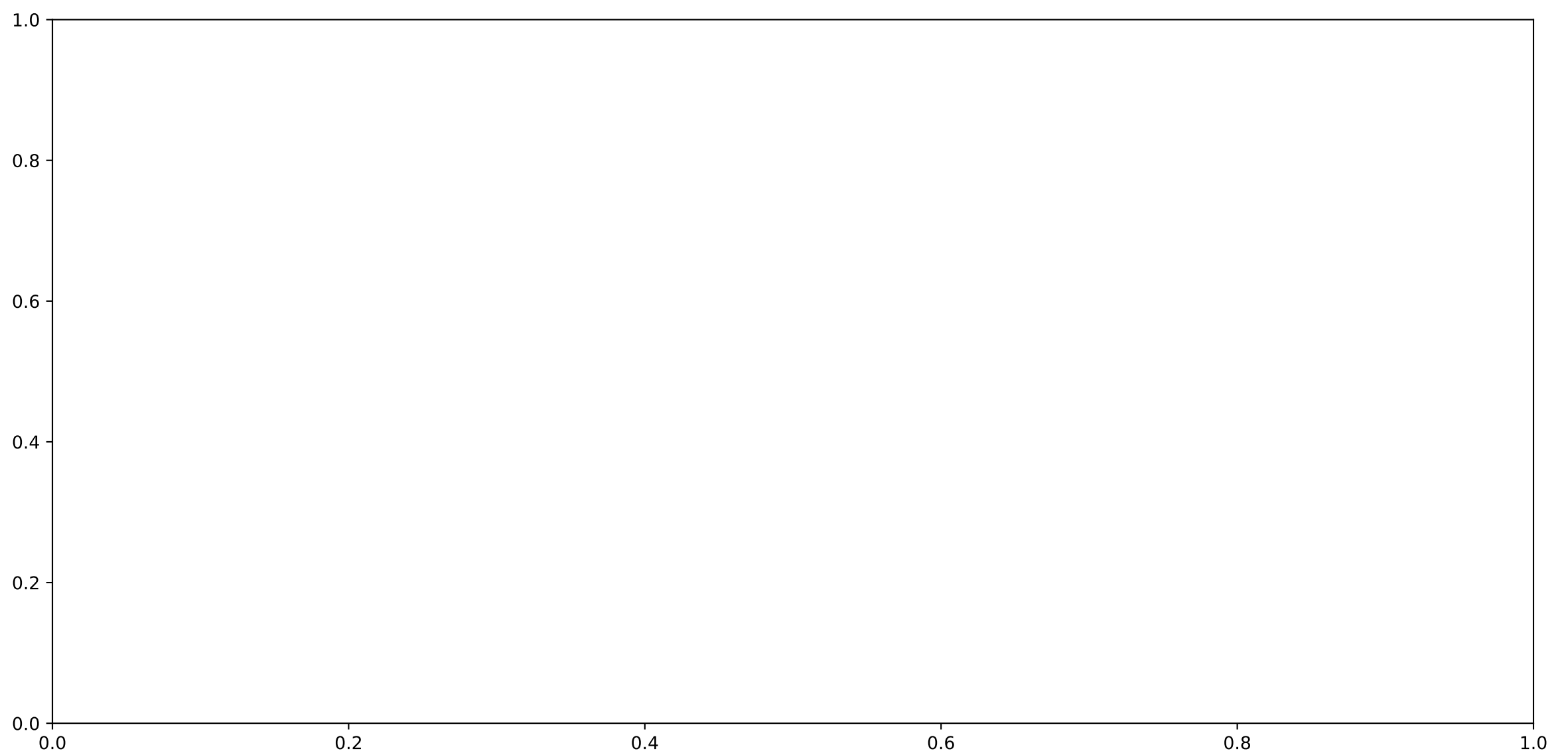


ANSWER A1:

From the contour plot, we can see that the objective function $L(\theta)$ forms a convex shape. This is evident from the contour lines, which are evenly spaced and symmetric around the minimum point (marked in red).

In a convex function, the local minimum is also the global minimum, and there is only one such minimum. This property is reflected in the contour plot, indicating that the function is convex. Additionally, the formulation of the objective function $L(\theta)$, which is a quadratic function, further supports the convexity of the function.

#



ANSWER A1:

- looks surprisingly smooth (but remember it is averaged over 500 iterations)
- this is generally good convergence behavior but we would need to look at the non averaged version to get a full picture

Declaration of Originality

I confirm that this assignment is my own work and I have

- Read and understood the guidance on plagiarism in the Course Handbook, including the University of Glasgow Statement on Plagiarism.
- Clearly referenced, in both the text and the bibliography or references, all sources used in the work.
- Fully referenced (including page numbers) and used inverted commas for all text quoted from books, journals, web etc. (Please check with the Subject which referencing style is to be used).
- Provided the sources for all tables, figures, data etc. that are not my own work.
- Not made use of the work of any other student(s) past or present without acknowledgement. This included any of my own work, that has previously, or concurrently, submitted for assessment, either at this or any other institution, including school.
- Not sought or used the services of any professional agencies to produce this work.
- In addition, I understand that any false claim in respect of this work will result in disciplinary action in accordance with University regulations.

DECLARATION

I am aware of and understand the University's policy on plagiarism and I certify that this assignment is my own work, except where indicated by referencing, and that I have followed the good academic practices noted above.

Extract from the University of Glasgow Plagiarism Statement

- 31.1 The University's degrees and other academic awards are given in recognition of a student's personal achievement. All work submitted by students for assessment is accepted on the understanding that it is the student's own effort.
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 - a close paraphrase;
 - an unacknowledged summary of a source;
 - direct copying or transcription.

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Student Id 2931267N

Typewritten signature: Siyu Na

UUID System: 2875782872