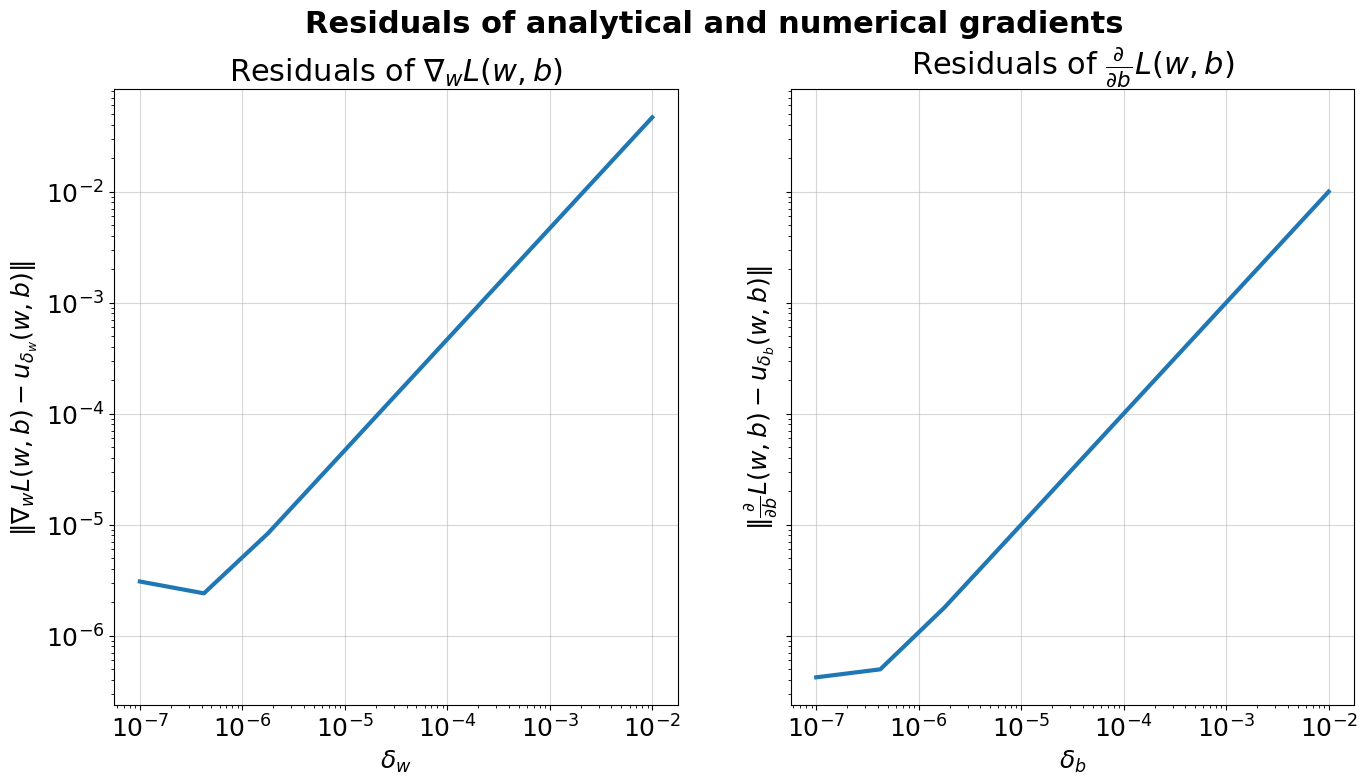
Major HW 3 – Regression

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**Q1.**

**Q2.**

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Diagram

Description automatically generated**Q3.**

We see here that from the most part (excluding the higher the learning rate, the faster the descent of the loss is. This makes sense because small learning rates create a slow gradient descent, so that we arrive at the minimum of the loss only after a great amount of iterations. As for we can see that the loss is divergent after a few iterations, the large “jumps” that occur do not allow the gradient descent to arrive at a minimal loss.

Our best learning rate (the one that achieved the minimal validation loss) is , and it does not make sense to increase the number of gradient steps as it seems to achieve this minimum before step 1500 and slightly diverge around the minimum.

**Q4.**

|  |  |  |  |
| --- | --- | --- | --- |
| Model | Section | Train MSE | Valid MSE |
|  |  | Cross Validated | |
| Dummy | 2 | -105.82 | -106.19 |