Homework -4 COEN 240-Machine Learning

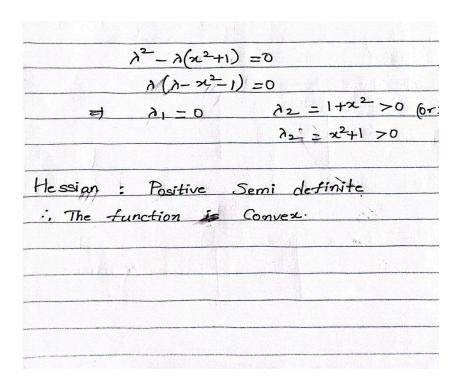
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1.

Given the cost function $J(w_0, w_1) = \frac{1}{2m} \sum_{i=1}^{m} (w_0 + w_1 \mathbf{x}^{(i)} - y_i)^2$, determine the definiteness of its Hessian matrix and the convexity of the function. Assume 1-D dataset and m = 1. Show your work.

Solution below \rightarrow

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Reference:

- 1. Class notes
- 2. https://people.eecs.berkeley.edu/~jordan/courses/294-fall09/lectures/optimization/slides.pdf
- 3. https://d2l.ai/chapter-optimization/convexity.html