**HW1**

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# 1) Analytical Differentiation

### Task 1

Given the gradient and hessian of , we will calculate the gradient and hessian of , as follows:

Gradient:

Hessian:

### Task 2

Given the gradient and hessian of , and first and second derivatives of h, we will calculate the gradient and hessian of , as follows:

Gradient:

Hessian: