

2025 USA-NA-AIO Round 1, Problem 2, Part 7

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Mar 2025

Part 7 (5 points, non-coding task)

This question follows Part 6.

Denote by $\mathbf{W} \in \mathbb{R}^{\text{hidden_features} \times \text{input_features}}$ the transformation matrix from the input layer to the hidden layer.

Given input $\mathbf{x} \in \mathbb{R}^{\text{input_features}}$, write down the formula of the output \mathbf{y} and its shape.

- Reasoning is not required.

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Misplaced '#'

$$\mathbf{y} = \mathbf{W}^\top \mathbf{W} \mathbf{x} \\ \in \mathbb{R}^{\text{input_features}}.$$

"" END OF THIS PART ""

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