2025 USA-NA-AIO Round 1, Problem 3, Part 11

USAAIO Mar 2025

Part 11 (5 points, non-coding task)

Compute

$$\frac{d\sigma(z)}{dz}.$$

- Express your answer using $\sigma(z)$ only (e^z or e^{-z} should not appear in your final solution).
- Reasoning is required.

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Misplaced '#'

We have

$$\begin{aligned}\frac{d\sigma(z)}{dz} &= \frac{e^{-z}}{(1+e^{-z})^2} \\ &= \boxed{\sigma(z)(1-\sigma(z))}.\end{aligned}$$

""" END OF THIS PART """

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