A Logistic Regression problem using the fourclass labelled data from LIBSVM

$(n,\ d) = (862,2)$

Logistic Regression

$$\min_{w \in \mathbf{R}^d} \frac{1}{n} \sum_{i=1} \ln(1 + e^{-y^i \langle w, x^i \rangle}) + \lambda ||w||_2^2$$

Can we prove that this always works?