Homework #5

Given the logistic regression model (with intercept):

$\beta = [2, 3, 2]$

Determine the class (0 or 1) assigned to the feature vector:

$x = [-1, 2]$

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$$y' = \frac{1}{1 + e^{-\beta^T x'}}, \quad x' = [1\ x], \quad -[2,3,2]\begin{bmatrix} 1 \\ -1 \\ 2 \end{bmatrix} = -3$$

$$\Rightarrow y' = \frac{1}{1 + e^{-3}} = \boxed{0.9526} = P(y'=1 \mid x')$$

A: The most likely class is 1, hence 1 is the class assigned to X.

Note:

- $\beta^T X < 0 \Rightarrow x \in C(1)$
- $\beta^T X > 0 \Rightarrow x \in C(0)$