Can you multiply these matrices ? If yes, show the result. Otherwise, provide the reason.

$$A = \begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \end{bmatrix} \qquad B = \begin{bmatrix} 1 & 3 \\ 2 & 4 \end{bmatrix}$$

a). A x B b). B x A

Suppose the weight vector of a Logistic Regression classifier is $\mathbf{w}^T = [w_0, w_1, w_2, w_3] = [-0.5, 0.75, 0.89, 1.12]$ and the threshold for Class 1 is 0.5, determine the class label for a test instance $\mathrm{x}^T = [1, 0.81, 0.33, 0.55]$

What could happen to the gradient descent algorithm if the learning rate is large?

(a). The algorithm converges quickly

(b). The algorithm converges normally

(c). The algorithm converges slowly

(d). The algorithm diverges

(e). None of the above