Consider the following three samples and their labels $((x_1, x_2), y)$:

$$\{((1,1),+),\ \ ((2,2),-),\ \ ((0,0),+)\}$$

Look at the perceptron update rule with $\eta = 0.1$

$$\mathbf{w}^{k+1} \leftarrow \mathbf{w}^k + \eta \sum_{\mathbf{x}_i \in \mathcal{E}} y_i \mathbf{x}_i$$

Classify as + ve if $\mathbf{w}^T\mathbf{x} \geq 0$ else - ve. Start $\mathbf{w}^0 = [-1, -1, 4]^T$. Find $\mathbf{w}^1$?

(A) $\mathbf{w}^1$ is independent of η

(B) $\mathbf{w}^1$ is parallel to $\mathbf{w}^0$, but different.

(C) $\mathbf{w}^1$ will be the same as $\mathbf{w}^0$

(D) Algorithm has converged. $\mathbf{w}^2$ will be the same as $\mathbf{w}^1$

(E) **[Ans]** None of the above

Consider the following three samples and their labels $((x_1, x_2), y)$:

$$\{((1,1),+),\ \ ((2,2),-),\ \ ((0,0),+)\}$$

Look at the perceptron update rule with $\eta = 0.1$

$$\mathbf{w}^{k+1} \leftarrow \mathbf{w}^k + \eta \sum_{\mathbf{x}_i \in \mathcal{E}} y_i \mathbf{x}_i$$

Classify as + ve if $\mathbf{w}^T\mathbf{x} \geq 0$ else - ve.

Start $\mathbf{w}^0 = [-1, -1, 2]^T$. Find $\mathbf{w}^1$?

(A) $\mathbf{w}^1$ is independent of η

(B) $\mathbf{w}^1$ is parallel to $\mathbf{w}^0$, but different.

(C) $\mathbf{w}^1$ will be the same as $\mathbf{w}^0$

(D) $\mathbf{w}^2$ will be the same as $\mathbf{w}^1$

(E) **[Ans]** None of the above

Consider the following three samples and their labels $((x_1, x_2), y)$:

$$\{((1,1),+),\ \ ((2,2),-),\ \ ((0,0),+)\}$$

Look at the perceptron update rule with $\eta = 0.1$

$$\mathbf{w}^{k+1} \leftarrow \mathbf{w}^k + \eta \sum_{\mathbf{x}_i \in \mathcal{E}} y_i \mathbf{x}_i$$

Classify as + ve if $\mathbf{w}^T\mathbf{x} \geq 0$ else - ve.

Start $\mathbf{w}^0 = [-1, -1, 1.9]^T$. Find $\mathbf{w}^1$?

(A) $\mathbf{w}^1$ is independent of η

(B) $\mathbf{w}^1$ is parallel to $\mathbf{w}^0$, but different.

(C) $\mathbf{w}^1$ will be the same as $\mathbf{w}^0$

(D) $\mathbf{w}^2$ will be the same as $\mathbf{w}^1$

(E) **[Ans]** None of the above

Consider the following three samples and their labels $((x_1, x_2), y)$:

$$\{((1,1),+),\ \ ((2,2),-),\ \ ((0,0),+)\}$$

Look at the perceptron update rule with $\eta = 0.1$

$$\mathbf{w}^{k+1} \leftarrow \mathbf{w}^k + \eta \sum_{\mathbf{x}_i \in \mathcal{E}} y_i \mathbf{x}_i$$

Classify as + ve if $\mathbf{w}^T\mathbf{x} \geq 0$ else - ve.

Start $\mathbf{w}^0 = [1, -1, 0]^T$. Find $\mathbf{w}^1$?

(A) **[Ans]** $\mathbf{w}^1$ is independent of η

(B) $\mathbf{w}^1$ is parallel to $\mathbf{w}^0$, but different.

(C) **[Ans]** $\mathbf{w}^1$ will be the same as $\mathbf{w}^0$

(D) **[Ans]** $\mathbf{w}^2$ will be the same as $\mathbf{w}^1$

(E) None of the above

Consider the following three samples and their labels $((x_1, x_2), y)$:

$$\{((1,1),+),\ \ ((2,2),-),\ \ ((0,0),+)\}$$

Look at the perceptron update rule with $\eta = 0.1$

$$\mathbf{w}^{k+1} \leftarrow \mathbf{w}^k + \eta \sum_{\mathbf{x}_i \in \mathcal{E}} y_i \mathbf{x}_i$$

Classify as + ve if $\mathbf{w}^T\mathbf{x} \geq 0$ else - ve.

Start $\mathbf{w}^0 = [1, -1, 0]^T$. $\mathbf{w}^2$ is:

(A) **[Ans]** $[1, -1, 0]^T$

(B) $[1.2, -0.8, 0.1]^T$

(C) $[0.8, -1.2, -0.1]^T$

(D) $[1.4, -0.6, 0.2]^T$

(E) None of the above