

$$\begin{aligned}
\frac{\partial D(X, w, b)}{\partial w} &= \frac{D(X, w + \epsilon, b) - D(X, w - \epsilon, b)}{(w + \epsilon) - (w - \epsilon)} = \frac{[X(w + \epsilon) + b] - [X(w - \epsilon) + b]}{(w + \epsilon) + (-w + \epsilon)} \\
&= \frac{[X(w + \epsilon) + b] + [-X(w - \epsilon) - b]}{(w - w) + (\epsilon + \epsilon)} = \frac{[Xw + X\epsilon + b] + [-Xw + X\epsilon - b]}{2\epsilon} \\
&= \frac{(Xw - Xw) + (X\epsilon + X\epsilon) + (b - b)}{2\epsilon} = \frac{2X\epsilon}{2\epsilon} = \frac{X\epsilon}{\epsilon} = X
\end{aligned}$$

$$\begin{aligned}
\frac{\partial D(X, w, b)}{\partial b} &= \frac{D(X, w, b + \epsilon) - D(X, w, b - \epsilon)}{(b + \epsilon) - (b - \epsilon)} = \frac{[Xw + (b + \epsilon)] - [Xw + (b - \epsilon)]}{(b + \epsilon) + (-b + \epsilon)} \\
&= \frac{[Xw + (b + \epsilon)] + [-Xw - (b - \epsilon)]}{(b - b) + (\epsilon + \epsilon)} = \frac{[Xw + b + \epsilon] + [-Xw - b + \epsilon]}{2\epsilon} \\
&= \frac{(Xw - Xw) + (b - b) + (\epsilon + \epsilon)}{2\epsilon} = \frac{2\epsilon}{2\epsilon} = \frac{\epsilon}{\epsilon} = 1
\end{aligned}$$