Problem 2c cont'd

$\underline{\sigma(x) = 0:}$

$\nabla w\text{Loss} = \vec{0} \Rightarrow \|\nabla w\text{Loss}\| = 0$

$\underline{\sigma(x) = \frac{2}{3}:}$

$$\nabla w\text{Loss} = 2\phi(x)\left(\tfrac{2}{3}\right)\left(1-\tfrac{2}{3}\right)\left(\tfrac{2}{3}-0\right)$$

$$= \frac{8}{27}\phi(x)$$

$$\|\nabla w\text{Loss}\| = \boxed{\frac{8}{27}\|\phi(x)\| = \|\nabla w\text{Loss}\|_{max}}$$