$z \in \mathbb{R}^n$, $c \in \mathbb{R}$

demostrar $\text{softmax}(z) = \text{softmax}(z + c \cdot 1)$

$\text{sofmax}(z)_i = \dfrac{e^{z_i}}{\sum_{j=1}^{n} \cdot e^{z_j}}$, así que $\text{softmax}(z + c \cdot 1)_i = \dfrac{e^{z_i + c}}{\sum_{j=1}^{n} \cdot e^{z_j + c}}$

Utilizando $e^{a+b} = e^a \cdot e^b$ tenemos que :

$$\text{softmax}(z + c \cdot 1)_i = \frac{e^{z_i + c}}{\sum_{j=1}^{n} \cdot e^{z_j + c}} = \frac{e^{z_i} \cdot e^{c}}{\sum_{j=1}^{n} \cdot e^{z_j} \cdot e^{c}}$$

$$= \frac{e^{z_i} \cdot e^{c}}{e^{c} \cdot \sum_{j=1}^{n} \cdot e^{z_j}} = \frac{e^{z_i}}{\sum_{j=1}^{n} \cdot e^{z_j}}$$

$$= \text{softmax}(z)_i$$