Mostre também que

$$\|\mathcal{E}_{k,l}\|^2 = (\mathcal{E}_{k,l}, \mathcal{E}_{k,l}) = m \cdot n$$

$$(\mathcal{E}_{k,l}, \mathcal{E}_{k,l}) = \sum_{r=0}^{m-1} \sum_{s=0}^{n-1} e^{i2\pi\left(k\frac{r}{m} + l\frac{s}{n}\right)} \cdot \overline{e^{i2\pi\left(k\frac{r}{m} + l\frac{s}{n}\right)}}$$

$$= \sum_{r=0}^{m-1} \sum_{s=0}^{n-1} e^{i2\pi\left((k-k)\frac{r}{n} + (l-l)\frac{s}{n}\right)} = e^{0} = 1$$

$$= \sum_{r=0}^{m-1} \sum_{s=0}^{n-1} 1 = m \cdot n$$