Demostración de Igualdad:

$$2 \cdot \operatorname{sen}(\alpha) \cdot \operatorname{sen}(\beta) = \cos(\alpha-\beta) - \cos(\alpha+\beta).$$

$\rightarrow$ $\operatorname{sen}(\alpha) = \dfrac{e^{i\alpha} - e^{-i\alpha}}{2i}$ y $\operatorname{sen}(\beta) = \dfrac{e^{i\beta} - e^{-i\beta}}{2i}$

$$\boxed{2 \cdot \operatorname{sen}(\alpha) \cdot \operatorname{sen}(\beta)} = \cancel{2} \cdot \frac{(e^{i\alpha} - e^{-i\alpha})}{\cancel{2}i} \cdot \frac{(e^{i\beta} - e^{-i\beta})}{2i} = -\frac{1}{2}(e^{i\alpha} - e^{-i\alpha}) \ldots$$

$\rightarrow$ hago distributiva.

$$= -\frac{1}{2}\left[e^{i\alpha} \cdot e^{i\beta} - e^{i\alpha} \cdot e^{-i\beta} - e^{-i\alpha} \cdot e^{i\beta} + e^{-i\alpha} \cdot e^{-i\beta}\right] =$$

$$= -\frac{1}{2}\left[\underbrace{e^{i(\alpha+\beta)} + e^{-i(\alpha+\beta)}}_{a} - \underbrace{\left(e^{i(\alpha-\beta)} + e^{-i(\alpha-\beta)}\right)}_{b}\right]$$

$\rightarrow$ desarrollo los $e^{i\theta} = \cos(\theta) + i\operatorname{sen}(\theta)$
$e^{-i\theta} = \cos(\theta) - i\operatorname{sen}(\theta)$

- $e^{i(\alpha+\beta)} = \cos(\alpha+\beta) + i\operatorname{sen}(\alpha+\beta)$
- $e^{-i(\alpha+\beta)} = \cos(\alpha+\beta) - i\operatorname{sen}(\alpha+\beta)$ } sumo y obtengo a
- $e^{i(\alpha-\beta)} = \cos(\alpha-\beta) + i\operatorname{sen}(\alpha-\beta)$
- $e^{-i(\alpha-\beta)} = \cos(\alpha-\beta) - i\operatorname{sen}(\alpha-\beta)$ } sumo y obtengo b.

$\rightarrow$ reemplazo en la ecuación

$$= -\frac{1}{\cancel{2}}\left[\cancel{2}\cos(\alpha+\beta) - \cancel{2}\cos(\alpha-\beta)\right] = \boxed{\cos(\alpha-\beta) - \cos(\alpha+\beta)}$$

$\Rightarrow$ podemos decir que la igualdad se cumple.