

# Problema # 4.

$$1. \quad \text{sen} B \text{sen} y = \frac{1}{2} (\cos(B-y) - \cos(B+y))$$

$$2. \quad \text{sen} B \cos y = \frac{1}{2} (\text{sen}(B+y) + \text{sen}(B-y))$$

Sol:

$$(1) \quad \cos(B+y) = \cos B \cos y - \text{sen}(B) \text{sen}(y) \quad (*)$$

$$\cos(B-y) = \cos B \cos y + \text{sen} B \text{sen} y. \quad (**)$$

sumando  $(**)$  con  $- (*) \Rightarrow$

$$\cos(B-y) - \cos(B+y) = \cos B \cos y - \cos B \cos y + 2 \text{sen} B \text{sen} y$$

$$\Rightarrow \text{sen} B \text{sen} y = \frac{1}{2} (\cos(B-y) - \cos(B+y))$$

$$(2) \quad \text{sen}(B+y) = \text{sen} B \cos y + \text{sen} y \cos B. \quad *$$

$$\text{sen}(B-y) = \text{sen} B \cos y - \text{sen} y \cos B. \quad **$$

sumando  $(*)$  con  $(**)$

$$\frac{\text{sen}(B+y) + \text{sen}(B-y)}{2} = \text{sen} B \cos y.$$