Solución:

$$\sec - \cos \alpha = \frac{1}{\cos \alpha} - \cos \alpha$$

$$= \frac{1 - \cos^2 \alpha}{\cos \alpha}$$

$$= \frac{\operatorname{sen}^2 \alpha}{\cos^2 \alpha}$$

$$= \operatorname{sen} \alpha \left(\frac{\operatorname{sen} \alpha}{\cos \alpha}\right)$$

$$\therefore \quad \sec \alpha - \cos \alpha = \operatorname{sen} \alpha (\tan \alpha)$$

EJERCICIOS XVI

Probar las siguientes identidades

1) $\quad \csc x = \dfrac{1}{\sqrt{1 - \cos^2 x}}$

2) $\quad \cos x = \dfrac{1}{\sqrt{1 + \tan^2 x}}$

3) $\quad \csc x = \dfrac{\sqrt{1 + \tan^2 x}}{\tan x}$

4) $\quad \operatorname{sen} x = \dfrac{1}{\sqrt{1 + \cot^2 x}}$

5) $\quad \tan x + \cot x = \dfrac{1}{\operatorname{sen} x \cos x}$

6) $\quad \csc^2 x = \dfrac{1}{1 - \cos^2 x}$

7) $\quad \operatorname{sen} x \, (\csc x - \sec x) = 1 - \tan x$

8) $\quad \cos^2 x = (1 + \operatorname{sen} A)(1 - \operatorname{sen} A)$

9) $\quad \cos^2 A + 9 = 10 - \operatorname{sen}^2 A$

10) $\quad \sec A - \tan A \operatorname{sen} A = \cos A$

11) $\quad \cos^2 x \, (\sec x - 1) = \operatorname{sen}^2 x$

12) $\quad \cos^2 t - \operatorname{sen}^2 t = 2 \cos^2 t - 1$

13) $\quad (\tan \theta + \cot \theta) \tan \theta = \sec^2 \theta$

14) $\quad 1 - 2 \operatorname{sen}^2 x = 2 \cos^2 x - 1$

15) $\quad (1 + \operatorname{sen} \alpha)(1 - \operatorname{sen} \alpha) = \dfrac{1}{\operatorname{sen}^2 \alpha}$

16) $\quad (1 - \operatorname{sen}^2 t)(1 + \tan^2 t) = 1$

17) $\quad \dfrac{\operatorname{sen} A + \cos A}{\cos A} = 1 - \tan A$

18) $\quad \dfrac{1}{\csc y - \cot y} = \csc y + \cot y$

19) $\quad \dfrac{\operatorname{sen} \alpha}{1 + \cos \alpha} + \dfrac{1 + \cos \alpha}{\operatorname{sen} \alpha} = 2 \csc \alpha$

20) $\quad \dfrac{1}{\tan B + \cot B} = \operatorname{sen} B \cos B$