

$$7. (\sec x - \cos x)(\csc x - \sin x) = \frac{\tan x}{1 + \tan^2 x}$$

$$\rightarrow (\sec x - \cos x)(\csc x - \sin x) =$$

$$= \left(\frac{1}{\cos x} - \cos x \right) \left(\frac{1}{\sin x} - \sin x \right)$$

$$= \frac{1 - \cos^2 x}{\cos x} \cdot \frac{1 - \sin^2 x}{\sin x}$$

$$= \frac{\sin^2 x}{\cos x} \cdot \frac{\cos^2 x}{\sin x}$$

$$= \frac{\sin x}{\cos x} \cdot \cos^2 x$$

$$= \tan x \cdot \frac{1}{\sec^2 x}$$

$$(\sec^2 x = 1 + \tan^2 x)$$

$$= \frac{\tan x}{1 + \tan^2 x} //$$

$$8) \cos^6 x + \sin^6 x = 1 - 3\sin^2 x + 3\sin^4 x$$

$$\rightarrow \cos^6 x = (\cos^2 x)^3$$

$$((a-b)^3 = a^3 - 3a^2b + 3ab^2 - a^3) = (1 - \sin^2 x)^3$$

$$= 1 - 3\sin^2 x + 3\sin^4 x - \sin^6 x$$

$$\Rightarrow$$