

ASIGNATURA:	Matemáticas III - Cálculo Integral	TUTOR:	Deivis Galván Cabrera
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IDENTIDADES TRIGONOMÉTRICAS

Identidades fundamentales

$$\bullet \cos^2 \alpha + \sin^2 \alpha = 1$$

$$\bullet \sec^2 \alpha = 1 + \tan^2 \alpha$$

$$\bullet \operatorname{cosec}^2 \alpha = 1 + \cot^2 \alpha$$

$$\bullet \operatorname{cosec} \alpha = \frac{1}{\sin \alpha}$$

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

$$\bullet \cot \alpha = \frac{1}{\tan \alpha} = \frac{\cos \alpha}{\sin \alpha}$$

$$\tan x = \frac{\sin x}{\cos x}$$

$$\cot x = \frac{\cos x}{\sin x}$$

$$\sec x = \frac{1}{\cos x}$$

$$\operatorname{csc} x = \frac{1}{\sin x}$$

$$\sin^2 x + \cos^2 x = 1$$

$$\sin^2 x = 1 - \cos^2 x$$

$$\cos^2 x = 1 - \sin^2 x$$

$$\sec^2 x - \tan^2 x = 1$$

$$\operatorname{csc}^2 x - \cot^2 x = 1$$

A. Comprobar las siguientes identidades trigonométricas

$$1) \frac{\sin x + \cos x}{\sin x} = 1 + \frac{1}{\tan x}$$

$$2) \frac{\sin x}{\operatorname{csc} x} + \frac{\cos x}{\sec x} = 1$$

$$3) \frac{\sec y}{\tan y + \cot y} = \sin y$$

$$4) \frac{1 - \sin x}{\cos x} = \frac{\cos x}{1 + \sin x}$$

$$5) \frac{\tan x + \cot x}{\tan x - \cot x} = \frac{\sec^2 x}{\tan^2 x - 1}$$

b.

Determina las derivadas de las siguientes funciones

$$1. f(x) = \sin x - \cos x$$

$$2. f(x) = \tan x - \sin x$$

$$3. g(x) = (\sin x)(\tan x)$$

$$4. g(x) = (\cos x)(\cotan x)$$

$$5. h(x) = 2 \operatorname{cosec} x - \sec x + 3x$$

$$6. h(x) = 2 \sec x + 3 \tan x + 3x$$

$$7. r(x) = x \cos x + x^2 + 1$$

$$8. r(x) = 2x \sin x - x^2$$

$$9. s(x) = (x^2 - x + 1) \tan x$$