

Demuestra las identidades trigonométricas propuestas

$$1.- \operatorname{cosec} \alpha \cdot \cos \alpha = \operatorname{cotg} \alpha$$

$$2.- \operatorname{cosec} \alpha \cdot \operatorname{tg} \alpha = \sec \alpha$$

$$3.- 1 + \operatorname{tg}^2(-\alpha) = \sec^2 \alpha$$

$$4.- 1 + \operatorname{ctg}^2(-\alpha) = \operatorname{cosec}^2 \alpha$$

$$5.- \cos \alpha (\operatorname{tg} \alpha + \operatorname{cotg} \alpha) = \operatorname{cosec} \alpha$$

$$6.- \operatorname{sen} \alpha (\operatorname{cotg} \alpha + \operatorname{tg} \alpha) = \sec \alpha$$

$$7.- \operatorname{tg} \alpha \operatorname{cot} \alpha - \cos^2 \alpha = \operatorname{sen}^2 \alpha$$

$$8.- \operatorname{sen} \alpha \operatorname{cosec} \alpha - \cos^2 \alpha = \operatorname{sen}^2 \alpha$$

$$9.- (\sec \alpha - 1)(\sec \alpha + 1) = \operatorname{tg}^2 \alpha$$

$$10.- (\operatorname{cosec} \alpha - 1)(\operatorname{cosec} \alpha + 1) = \operatorname{tg}^2 \alpha$$

$$11.- (\sec \alpha + \operatorname{tg} \alpha)(\sec \alpha - \operatorname{tg} \alpha) = 1$$

$$12.- (\operatorname{cosec} \alpha + \operatorname{cotg} \alpha)(\operatorname{cosec} \alpha - \operatorname{cotg} \alpha) = 1$$

$$13.- \operatorname{sen}^2 \alpha (1 + \operatorname{cotg}^2 \alpha) = 1$$

$$14.- (1 - \operatorname{sen}^2 \alpha)(1 + \operatorname{tg}^2 \alpha) = 1$$

$$15.- (\operatorname{sen} \alpha + \cos \alpha)^2 + (\operatorname{sen} \alpha - \cos \alpha)^2 = 2$$

$$16.- \operatorname{tg}^2 \alpha \cos^2 \alpha + \operatorname{cot}^2 \alpha \operatorname{sen}^2 \alpha = 1$$

$$17.- \sec^4 \alpha - \sec^2 \alpha = \operatorname{tg}^4 \alpha + \operatorname{tg}^2 \alpha$$

$$18.- \operatorname{cosec}^4 \alpha - \operatorname{cosec}^2 \alpha = \operatorname{cotg}^4 \alpha + \operatorname{cotg}^2 \alpha$$

$$19.- \sec \alpha - \operatorname{tg} \alpha = \frac{\cos \alpha}{1 + \operatorname{sen} \alpha}$$

$$20.- \operatorname{cosec} \alpha - \operatorname{cotg} \alpha = \frac{\operatorname{sen} \alpha}{1 + \cos \alpha}$$