

TRIGONOMETRÍA

11.- Demostrar las siguientes identidades trigonométricas:

a) $\operatorname{cosec}^2 a - \cot^2 a = 1$

b) $\sec^2 a + \operatorname{cosec}^2 a = \sec^2 a \cdot \operatorname{cosec}^2 a$

c) $\operatorname{tg} a + \cot a = \sec a \cdot \operatorname{cosec} a$

d) $\operatorname{sen}^2 a - \cos^2 \beta = \operatorname{sen}^2 \beta - \cos^2 a$

e) $\sec^2 a + \operatorname{cosec}^2 a = (\operatorname{tg} a + \cot a)^2$

f) $\operatorname{sen}^2 a \cdot \sec^2 a - \sec^2 a = -1$

g) $(\operatorname{sen} a + \cos a)^2 + (\operatorname{sen} a - \cos a)^2 = 2$

h) $\operatorname{tg}^2 a \cdot \cos^2 a + \cot^2 a \cdot \operatorname{sen}^2 a = 1$

i) $(r \cdot \operatorname{sen} a \cdot \cos \beta)^2 + (r \cdot \operatorname{sen} a \cdot \operatorname{sen} \beta)^2 + (r \cdot \cos a)^2 = r^2$

j) $\operatorname{sen} a + \cos a = \operatorname{sen}^3 a + \operatorname{sen}^2 a \cdot \cos a + \cos^2 a \cdot \operatorname{sen} a + \cos^3 a$

k) $\frac{\operatorname{tg} a}{1 + \operatorname{seca}} - \frac{\operatorname{tg} a}{1 - \operatorname{seca}} = 2 \operatorname{coseca}$

l) $\frac{\operatorname{coseca} - \operatorname{sen} a}{\cot a} - \frac{\cot a}{\operatorname{coseca}} = 0$

m) $\frac{\sec^4 a - 1}{\operatorname{tg}^2 a} = \sec^2 a + 1$

n) $\frac{2 \cos^2 a - \operatorname{sen}^2 a + 1}{\cos a} = 3 \cos a$

o) $\frac{\operatorname{seca}}{1 - \cos a} - \frac{\operatorname{seca} + 1}{\operatorname{sen}^2 a} = 0$

p) $\frac{\cos a}{1 - \operatorname{sen} a} - \frac{1 + \operatorname{sen} a}{\cos a} = 0$