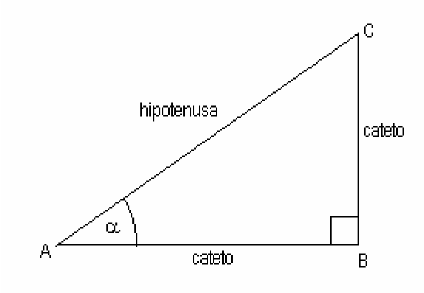
FORMULARIO DE TRIGONOMETRÍA



1.- $\text{sen}\alpha = \dfrac{\text{cateto opuesto a }\alpha}{\text{hipotenusa}}$

2.- $\cos\alpha = \dfrac{\text{cateto adyacente a }\alpha}{\text{hipotenusa}}$

3.- $\text{tg}\alpha = \dfrac{\text{cateto opuestoa a}\alpha}{\text{cateto adyacente a}\alpha} = \dfrac{\text{sen}\alpha}{\cos\alpha}$

4.- $4.\text{cosec}\alpha = \dfrac{1}{\text{sen}\alpha}$

5.- $\sec\alpha = \dfrac{1}{\cos\alpha}$

6.- $\cot\alpha = \dfrac{1}{\text{tg}\alpha} = \dfrac{\cos\alpha}{\text{sen}\alpha}$

7.- $\text{sen}^2\alpha + \cos^2\alpha = 1$

8.- $\text{tg}^2\alpha + 1 = \sec^2\alpha$

9.- $\cot^2\alpha + 1 = \text{cosec}^2\alpha$

10.- $\text{sen}2\alpha = 2\text{sen}\alpha\cos\alpha$

11.- $\cos 2\alpha = \cos^2\alpha - \text{sen}^2\alpha = 2\cos^2\alpha - 1 = 1 - 2\text{sen}^2\alpha$

12.- $\text{tg}2\alpha = \dfrac{2\text{tg}\alpha}{1 - \text{tg}^2\alpha}$

13.- $\text{sen}\alpha = 2\text{sen}\left(\dfrac{\alpha}{2}\right)\cos\left(\dfrac{\alpha}{2}\right)$

14.- $\cos\alpha = \cos^2\left(\dfrac{\alpha}{2}\right) - \text{sen}^2\left(\dfrac{\alpha}{2}\right) = 2\cos^2\left(\dfrac{\alpha}{2}\right) - 1 = 1 - \text{sen}^2\left(\dfrac{\alpha}{2}\right)$

15.- $\text{sen}\left(\dfrac{\alpha}{2}\right) = 2\text{sen}\left(\dfrac{\alpha}{4}\right)\cos\left(\dfrac{\alpha}{4}\right)$

16.- $\cos\left(\dfrac{\alpha}{2}\right) = \cos^2\left(\dfrac{\alpha}{4}\right) - \text{sen}^2\left(\dfrac{\alpha}{4}\right) = 2\cos^2\left(\dfrac{\alpha}{4}\right) - 1 = 1 - 2\text{sen}^2\left(\dfrac{\alpha}{4}\right)$

17.- $\text{sen}\dfrac{\alpha}{2} = \sqrt{\dfrac{1 - \cos\alpha}{2}}$

18.- $\cos\dfrac{\alpha}{2} = \sqrt{\dfrac{1 + \cos\alpha}{2}}$

19.- $\tan\frac{\alpha}{2} = \sqrt{\frac{1-\cos\alpha}{1+\cos\alpha}}$ $\tan\frac{\alpha}{2} = \frac{\text{sen}\alpha}{1+\cos\alpha} = \frac{1-\cos\alpha}{\text{sen}\alpha}$

20.- $\text{sen}^2\alpha = \frac{1-\cos 2\alpha}{2}$

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

22.- $\text{tg}^2\alpha = \frac{1-\cos 2\alpha}{1+\cos 2\alpha}$

23.- $\text{sen}\left(\frac{\alpha}{2}\right) = \sqrt{\frac{1-\cos\alpha}{2}}$

24.- $\cos\left(\frac{\alpha}{2}\right) = \sqrt{\frac{1+\cos\alpha}{2}}$

25.- $\text{tg}\left(\frac{\alpha}{2}\right) = \sqrt{\frac{1-\cos\alpha}{1+\cos\alpha}}$

26.- $\text{sen}(\alpha \pm \beta) = \text{sen}\alpha\cos\beta \pm \cos\alpha\,\text{sen}\beta$

27.- $\cos(\alpha \pm \beta) = \cos\alpha\cos\beta \mp \text{sen}\alpha\,\text{sen}\beta$

28.- $\text{tg}(\alpha + \beta) = \frac{\text{tg}\alpha + \text{tg}\beta}{1 - \text{tg}\alpha\,\text{tg}\beta}$

29.- $\text{tg}(\alpha - \beta) = \frac{\text{tg}\alpha - \text{tg}\beta}{1 + \text{tg}\alpha\,\text{tg}\beta}$

30.- $\text{sen}\alpha + \text{sen}\beta = 2\text{sen}\left(\frac{\alpha+\beta}{2}\right)\cos\left(\frac{\alpha-\beta}{2}\right)$

31.- $\text{sen}\alpha - \text{sen}\beta = 2\cos\left(\frac{\alpha+\beta}{2}\right)\text{sen}\left(\frac{\alpha-\beta}{2}\right)$

32.- $\cos\alpha + \cos\beta = 2\cos\left(\frac{\alpha+\beta}{2}\right)\cos\left(\frac{\alpha-\beta}{2}\right)$

33.- $\cos\alpha - \cos\beta = -2\text{sen}\left(\frac{\alpha+\beta}{2}\right)\text{sen}\left(\frac{\alpha-\beta}{2}\right)$

34.- $\text{sen}\alpha\cos\beta = \frac{\text{sen}(\alpha+\beta) + \text{sen}(\alpha-\beta)}{2}$

35.- $\cos\alpha\,\text{sen}\beta = \frac{\text{sen}(\alpha+\beta) - \text{sen}(\alpha-\beta)}{2}$

36.- $\cos\alpha\cos\beta = \dfrac{\cos(\alpha+\beta)+\cos(\alpha-\beta)}{2}$

37.- $\text{sen}\alpha\,\text{sen}\beta = \dfrac{\cos(\alpha-\beta)-\cos(\alpha+\beta)}{2}$

38.- $\text{sen}(-\alpha) = -\text{sen}\alpha$

39.- $\cos(-\alpha) = \cos\alpha$

40.- $\text{tg}(-\alpha) = -\text{tg}\alpha$

41.- $\cot g(-\alpha) = -\cot g\alpha$

42.- $\sec(-\alpha) = \sec\alpha$

43.- $\cos ec(-\alpha) = -\cos ec\alpha$

44.- $\text{sen}\left(\dfrac{\pi}{2}-\alpha\right) = \cos\alpha$

45.- $\cos\left(\dfrac{\pi}{2}-\alpha\right) = \text{sen}\alpha$

46.- $\text{tg}\left(\dfrac{\pi}{2}-\alpha\right) = \cot g\alpha$

47.- $\cot g\left(\dfrac{\pi}{2}-\alpha\right) = \text{tg}\alpha$

48.- $\sec\left(\dfrac{\pi}{2}-\alpha\right) = \cos ec\alpha$

49.- $\cos ec\left(\dfrac{\pi}{2}-\alpha\right) = \sec\alpha$

50.- $\cos(kx) = \dfrac{e^{ikx}+e^{-ikx}}{2}$ donde $k = \text{constante}; i = \sqrt{-1}$

51.- $\text{sen}(kx) = \dfrac{e^{ikx}-e^{-ikx}}{2i}$

52.- $\cosh(kx) = \dfrac{e^{kx}+e^{-kx}}{2}$

53.- $\text{senh}(kx) = \dfrac{e^{kx}-e^{-kx}}{2}$