TAULA DE FÓRMULES TRIGONOMÈTRIQUES

I. Definicions i relacions bàsiques

$$\sin A = \frac{a}{c} = \cos B = \cos(90°-A) = 1 / \operatorname{cosec} A = \sqrt{1-\cos^2 A}$$

$$\cos A = \frac{b}{c} = \sin B = \sin(90°-A) = 1 / \sec A = \sqrt{1-\sin^2 A}$$

$$\tan A = \frac{a}{b} = \frac{\sin A}{\cos A} = \operatorname{cotg} B = \operatorname{cotg}(90°-A) = 1 / \operatorname{cotg} A$$

$$\operatorname{cosec} A = \frac{c}{a} = \sec B = \sec(90°-A) = 1 / \sin A = (1+\operatorname{cotg}^2 A)^{1/2}$$

$$\sec A = \frac{c}{b} = \operatorname{cosec} B = \operatorname{cosec}(90°-A) = 1 / \cos A = (1+\tan^2 A)^{1/2}$$

$$\operatorname{cotg} A = \frac{b}{a} = \tan B = \tan(90°-A) = \cos A / \sin A = 1 / \tan A$$

II. Fórmules relatives al sinus

$$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$

$$\sin(A+B) = \sin A \ \cos B + \cos A \ \sin B$$

$$\sin(A-B) = \sin A \ \cos B - \cos A \ \sin B$$

$$\sin A + \sin B = 2 \sin \frac{1}{2}(A+B) \ \cos \frac{1}{2}(A-B)$$

$$\sin A - \sin B = 2 \cos \frac{1}{2}(A+B) \ \sin \frac{1}{2}(A-B)$$

$$\sin 2A = 2 \sin A \ \cos A$$

$$\sin \frac{1}{2} A = \pm \sqrt{(1-\cos A)/2}$$

$$\sin(A+B) + \sin(A-B) = 2 \sin A \ \cos B$$

$$\sin(A+B) - \sin(A-B) = 2 \cos A \ \sin B$$

...

III. Fórmules relatives al cosinus

$$\cos A = \frac{b^2 + c^2 - a^2}{2bc}$$

$$\cos(A+B) = \cos A \ \cos B - \sin A \ \sin B$$

$$\cos(A-B) = \cos A \ \cos B + \sin A \ \sin B$$

$$\cos A + \cos B = 2\cos\frac{1}{2}(A+B) \ \cos\frac{1}{2}(A-B)$$

$$\cos A - \cos B = -2\cos\frac{1}{2}(A+B) \ \sin\frac{1}{2}(A-B)$$

$$\cos 2A = \cos^2 A - \sin^2 A$$

$$\cos 2A = 2\cos^2 A - 1$$

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

$$\cos\frac{1}{2}A = \pm\frac{\sqrt{1+\cos A}}{2}$$

$$\cos(A+B) + \cos(A-B) = 2\cos A \cos B$$

$$\cos(A+B) - \cos(A-B) = -2\sin A \sin B$$

IV. Fórmules relatives a la tangent

$$\frac{\tan\frac{1}{2}(A-B)}{\tan\frac{1}{2}(A+B)} = \frac{a-b}{a+b}$$

$$\tan(A+B) = \frac{\tan A + \tan B}{1 - \tan A \ \tan B}$$

$$\tan(A-B) = \frac{\tan A - \tan B}{1 + \tan A \ \tan B}$$

$$\tan 2A = \frac{2\tan A}{1 - \tan^2 A}$$

$$\tan\frac{1}{2}A = \frac{\sin A}{1+\cos A}$$

$$\tan\frac{1}{2}A = \pm\sqrt{\frac{1-\cos A}{1+\cos A}}$$

$$\tan\frac{1}{2}A = (1-\cos A)/(\sin A)$$

...

V. Fórmules amb productes

$$\sin A\ \cos B = \frac{1}{2}\left[\sin(A+B)+\sin(A-B)\right]$$

$$\cos A\ \sin B = \frac{1}{2}\left[\sin(A+B)-\sin(A-B)\right]$$

$$\cos A\ \cos B = \frac{1}{2}\left[\cos(A+B)+\cos(A-B)\right]$$

$$\sin A\ \sin B = -\frac{1}{2}\left[\cos(A+B)-\cos(A-B)\right]$$

VI. Alguns valors bàsics

	0°	*30°*	*45°*	*60°*	*90°*	*180°*	*270°*
sin	0	1/2	$\sqrt{2}/2$	$\sqrt{3}/2$	1	0	–1
cos	1	$\sqrt{3}/2$	$\sqrt{2}/2$	1/2	0	–1	0
tan	0	$\sqrt{3}/3$	1	$\sqrt{3}$	—	0	—
cotg	—	$\sqrt{3}$	1	$\sqrt{3}/3$	0	—	0
sec	1	$2\sqrt{3}/3$	$\sqrt{2}$	2	—	–1	—
cosec	—	2	$\sqrt{2}$	$2\sqrt{3}/3$	1	$\pm\infty$	–1

...