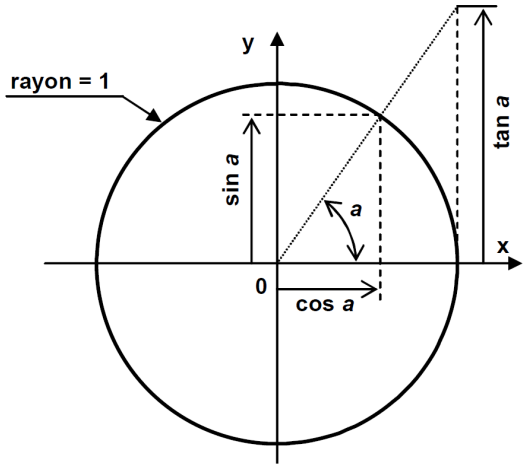
Formulaire de trigonométrie



Relation entre les carrés

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

$$1 + \tan^2 a = \frac{1}{\cos^2 a}$$

Relation sin(arcos)

$$\cos\big(arcsin(u)\big) = \sin\big(arcos(u)\big) = \sqrt{(1-u^2)}$$

Formules d'addition des angles

$$\cos(a+b) = \cos a \cos b - \sin a \sin b$$
$$\sin(a+b) = \sin a \cos b + \cos a \sin b$$
$$\tan(a+b) = \frac{\tan a + \tan b}{1 - \tan a \tan b}$$

$$\cos(a-b) = \cos a \cos b + \sin a \sin b$$
$$\sin(a-b) = \sin a \cos b - \cos a \sin b$$
$$\tan(a-b) = \frac{\tan a - \tan b}{1 + \tan a \tan b}$$

Si $a = b$,

$$\sin(2a) = 2\sin(a)\cos(a)$$
$$\cos(2a) = \cos^2(a) - \sin^2(a) = 2\cos^2(a) - 1 = 1 - 2\sin^2(a)$$
$$\tan(2a) = \frac{2\tan(a)}{1 - \tan^2(a)}$$

Formules de duplication

$$\cos(2a) = 1 - 2.\sin^2 a$$
$$\cos(2a) = 2.\cos^2 a - 1$$

$$\sin(2a) = 2\sin a \cos a$$
$$\tan(2a) = \frac{2\tan a}{1 - \tan^2 a}$$

Transformations

$$\cos p + \cos q = 2\cos\tfrac{p+q}{2}\cos\tfrac{p-q}{2}$$
$$\cos p - \cos q = -2\sin\tfrac{p+q}{2}\sin\tfrac{p-q}{2}$$
$$\sin p + \sin q = 2\sin\tfrac{p+q}{2}\cos\tfrac{p-q}{2}$$
$$\sin p - \sin q = 2\cos\tfrac{p+q}{2}\sin\tfrac{p-q}{2}$$

$$\cos a \cos b = \tfrac{1}{2}(\cos(a+b) + \cos(a-b))$$
$$\sin a \sin b = -\tfrac{1}{2}(\cos(a+b) - \cos(a-b))$$
$$\sin a \cos b = \tfrac{1}{2}(\sin(a+b) + \sin(a-b))$$

Théroème d'Al Kashi

$$c^2 = a^2 + b^2 - 2ab\ \cos\ \gamma.$$