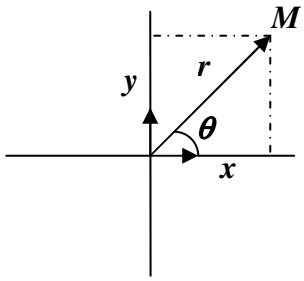
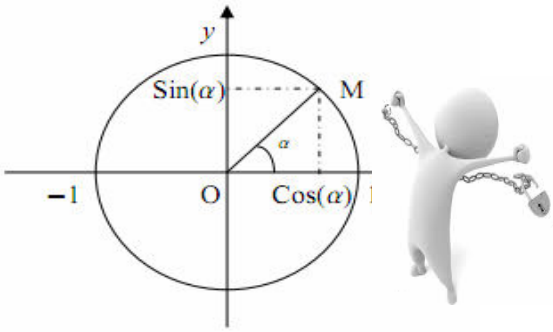
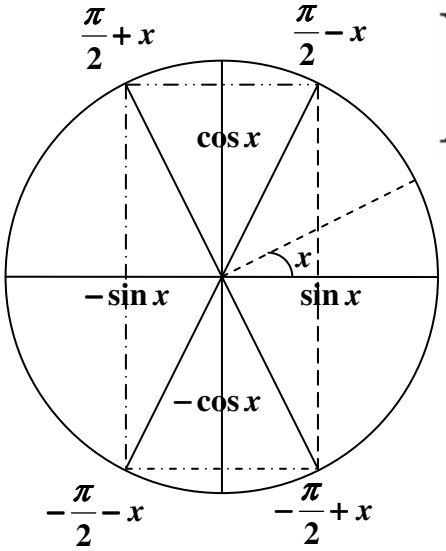
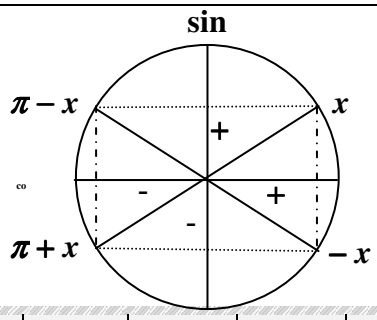
$$\begin{cases} r = \sqrt{x^2 + y^2} \\ \cos\theta = \dfrac{x}{r} \\ \sin\theta = \dfrac{y}{r} \end{cases}$$




MEBARKI
ENACER
AYAR
AYA




| $x$ | $0$ | $\frac{\pi}{6}$ | $\frac{\pi}{4}$ | $\frac{\pi}{3}$ | $\frac{\pi}{2}$ |
|---|---|---|---|---|---|
| $\sin x$ | $0$ | $\frac{1}{2}$ | $\frac{\sqrt{2}}{2}$ | $\frac{\sqrt{3}}{2}$ | $1$ |
| $\cos x$ | $1$ | $\frac{\sqrt{3}}{2}$ | $\frac{\sqrt{2}}{2}$ | $\frac{1}{2}$ | $0$ |

| | | | |
|---|---|---|---|
| $\sin\left(\frac{\pi}{2} - x\right) = \cos x$ | $\cos\left(\frac{\pi}{2} - x\right) = \sin x$ | $\cos(-x) = \cos x$ | $\sin(-x) = -\sin x$ |
| $\sin\left(\frac{\pi}{2} + x\right) = \cos x$ | $\cos\left(\frac{\pi}{2} + x\right) = -\sin x$ | $\cos(\pi - x) = -\cos x$ | $\sin(\pi - x) = \sin x$ |
| $\sin\left(-\frac{\pi}{2} - x\right) = -\cos x$ | $\cos\left(-\frac{\pi}{2} - x\right) = -\sin x$ | $\cos(\pi + x) = -\cos x$ | $\sin(\pi + x) = -\sin x$ |
| $\sin\left(-\frac{\pi}{2} + x\right) = -\cos x$ | $\cos\left(-\frac{\pi}{2} + x\right) = \sin x$ | $\cos(x + 2k\pi) = \cos x$ | $\sin(x + 2k\pi) = \sin x$ |

$$c\tan x = \frac{\cos x}{\sin x} \quad ; \quad \tan x = \frac{\sin x}{\cos x}$$
$$-1 \le \sin x \le 1 \quad ; \quad -1 \le \cos x \le 1$$
$$\cos^2 x + \sin^2 x = 1$$

$$\cos(a+b) = \cos a.\cos b - \sin a.\sin b$$
$$\cos(a-b) = \cos a.\cos b + \sin a.\sin b$$
$$\sin(a+b) = \sin a.\cos b + \cos a.\sin b$$
$$\sin(a-b) = \sin a.\cos b - \cos a.\sin b$$

$$\sin 2x = 2\sin x.\cos x$$

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

$$\cos x = \cos b \Leftrightarrow \begin{cases} x = b + 2k\pi \\ x = -b + 2k\pi \end{cases}$$

$$\cos^2 x = \frac{\cos 2x + 1}{2}$$

$$\sin^2 x = \frac{1 - \cos 2x}{2}$$

$$\sin x = \sin a \Leftrightarrow \begin{cases} x = a + 2k\pi \\ x = \pi - a + 2k\pi \end{cases}$$

تذكر جيدا: " أنك (تستطيع النجاح) في حياتك الدراسية ولو كان الناس جميعا يعتقدون أنك غير ناجح . ولكنك (لن تنجح أبدا) إذا كنت تعتقد في نفسك أنك غير ناجح".

الأستاذ : مبـــاركي