

$$(a+b)^2 = a^2 + 2ab + b^2$$

$$(a-b)^2 = a^2 - 2ab + b^2$$

$$(a-b)(a+b) = a^2 - b^2$$

$$(a+b)^3 = a^3 + 3a^2b + 3ab^2 + b^3$$

$$(a-b)^3 = a^3 - 3a^2b + 3ab^2 - b^3$$

$$(a-b)(a^2 + ab + b^2) = a^3 - b^3$$

$$(a+b)(a^2 - ab + b^2) = a^3 + b^3$$

$$(\sqrt{a})^2 = a \quad \sqrt{a^2} = a \quad a \in \mathbb{R}^+ \quad b \in \mathbb{R}^+$$

$$\sqrt{\frac{a}{b}} = \frac{\sqrt{a}}{\sqrt{b}} \quad \sqrt{a \cdot b} = \sqrt{a} \cdot \sqrt{b}$$

$$\sqrt{x^2} = |x|, \quad x \in \mathbb{R}$$

$$a^n \times a^m = a^{n+m}$$

$$\frac{a^n}{a^m} = a^{n-m}$$

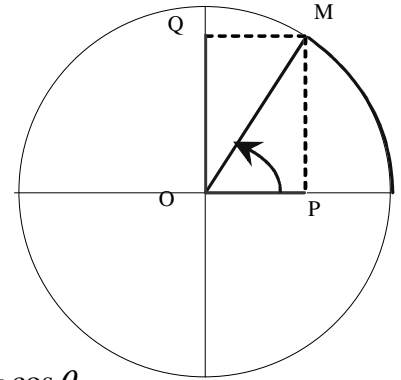
$$(a^n)^m = a^{n \times m}$$

$$(a \times b)^n = a^n \times b^n$$

$$\left(\frac{a}{b}\right)^n = \frac{a^n}{b^n}$$

$$a^0 = 1 \quad a^1 = a \quad a^{-n} = \frac{1}{a^n}$$

$$\frac{1}{10^{-n}} = 10^n$$



$$\overline{OP} = \cos \theta$$

$$\overline{OQ} = \sin \theta$$

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

$$\tan \theta = \frac{\sin \theta}{\cos \theta}; \quad \theta \neq \frac{\pi}{2} + k\pi$$

$$P(x) = ax^2 + bx + c$$

$$ax^2 + bx + c = 0$$

$$\Delta < 0$$

$$\Delta = 0$$

$$\Delta > 0$$

$$\Delta < 0$$

$$\Delta = 0$$

$$\Delta > 0$$

إشارة $P(x)$ هي إشارة a

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$$P(x) = a(x - x_1)^2$$

إشارة a خارج الجذرين وعكس إشارة a داخل الجذرين

$$P(x) = a(x - x_1)(x - x_2)$$

ليس للمعادلة حل في مجموعة الأعداد الحقيقية

$$x_1 = \frac{-b}{2a}$$

المعادلة حل وحيد مزدوج

$$x_1 = \frac{-b + \sqrt{\Delta}}{2a}$$

$$x_2 = \frac{-b - \sqrt{\Delta}}{2a}$$

المعادلة حلين

$$\cos(-x) = \cos x$$

$$\cos(\pi - x) = -\cos x$$

$$\cos(\pi + x) = -\cos x$$

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

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

$$\sin(-x) = -\sin x$$

$$\sin(\pi - x) = \sin x$$

$$\sin(\pi + x) = -\sin x$$

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

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

$$\tan(-x) = \tan x$$

$$\tan(\pi - x) = -\tan x$$

$$\tan(\pi + x) = \tan x$$

$$\tan\left(\frac{\pi}{2} + x\right) = -\frac{1}{\tan x}$$

$$\tan\left(\frac{\pi}{2} - x\right) = \frac{1}{\tan x}$$

	0	$\frac{\pi}{6}$	$\frac{\pi}{4}$	$\frac{\pi}{3}$	$\frac{\pi}{2}$	π
$\sin \theta$	0	$\frac{1}{2}$	$\frac{\sqrt{2}}{2}$	$\frac{\sqrt{3}}{2}$	1	0
$\cos \theta$	1	$\frac{\sqrt{3}}{2}$	$\frac{\sqrt{2}}{2}$	$\frac{1}{2}$	0	-1
$\tan \theta$	0	$\frac{\sqrt{3}}{3}$	1	$\sqrt{3}$	∞	0

متسلسلة إحصائية و N حصيصها المتراكم $(x_i, n_i)_{1 \leq i \leq k}$

$$\bar{x} = \frac{1}{N} \sum_{i=1}^k n_i x_i = \sum_{i=1}^k n_i f_i$$

$$e = \frac{1}{N} \sum_{i=1}^k n_i |x_i - \bar{x}|$$

$$\sigma = \sqrt{v} \quad \text{و} \quad v = \frac{1}{N} \sum_{i=1}^k n_i x_i^2 - \bar{x}^2$$