ภาคผนวก 2
สูตรพื้นฐาน

I

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

$$\tan^2\theta + 1 = \sec^2\theta$$

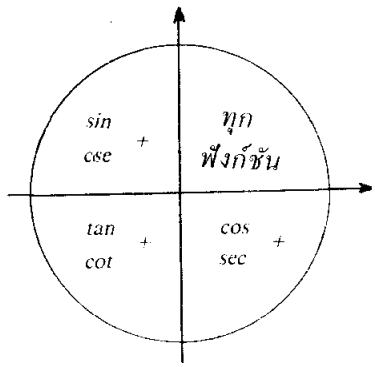
$$\cot^2\theta + 1 = \operatorname{cec}^2\theta$$

II

ฟังก์ชัน \ มุม	0°	30°	45°	60°	90°	180°	270°
sine	0	$\frac{1}{2}$	$\frac{1}{\sqrt{2}}$	$\frac{\sqrt{3}}{2}$	1	0	-1
cosine	1	$\frac{\sqrt{3}}{2}$	$\frac{1}{\sqrt{2}}$	$\frac{1}{2}$	0	-1	0
tangent	0	$\frac{1}{\sqrt{3}}$	1	$\sqrt{3}$	หาค่าไม่ได้	0	หาค่าไม่ได้

หมายเหตุ $30° = \frac{\pi}{6}$, $45° = \frac{\pi}{4}$, $60° = \frac{\pi}{3}$, $90° = \frac{\pi}{2}$, $180° = \pi$, $270° = \frac{3\pi}{2}$, $360° = 2\pi$

III



จัตุภาคที่ 2	$\sin(180^\circ - \theta) = +\sin\theta$ $\cos(180^\circ - \theta) = -\cos\theta$ $\tan(180^\circ - \theta) = -\tan\theta$
จัตุภาคที่ 3	$\sin(180^\circ + \theta) = -\sin\theta$ $\cos(180^\circ + \theta) = -\cos\theta$ $\tan(180^\circ + \theta) = +\tan\theta$
จัตุภาคที่ 4	$\sin(360^\circ - \theta) = -\sin\theta$ $\cos(360^\circ - \theta) = +\cos\theta$ $\tan(360^\circ - \theta) = -\tan\theta$
	$\sin(-\theta) = -\sin\theta$ $\cos(-\theta) = +\cos\theta$ $\tan(-\theta) = -\tan\theta$

จัตุภาคที่ 1	$\sin(90^\circ - \theta) = \cos\theta$ $\cos(90^\circ - \theta) = \sin\theta$ $\tan(90^\circ - \theta) = \cot\theta$
จัตุภาคที่ 2	$\sin(90^\circ + \theta) = +\cos\theta$ $\cos(90^\circ + \theta) = -\sin\theta$ $\tan(90^\circ + \theta) = -\cot\theta$
จัตุภาคที่ 3	$\sin(270^\circ - \theta) = -\cos\theta$ $\cos(270^\circ - \theta) = -\sin\theta$ $\tan(270^\circ - \theta) = +\cot\theta$
จัตุภาคที่ 4	$\sin(270^\circ + \theta) = -\cos\theta$ $\cos(270^\circ + \theta) = +\sin\theta$ $\tan(270^\circ + \theta) = -\cot\theta$

V

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

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

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

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

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

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

VI

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

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

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

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

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

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

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

VII

$$\sin 3A = 3 \sin A - 4 \sin^3 A$$

$$\cos 3A = 4\cos^3 A - 3 \cos A$$

$$\tan 3A = \frac{3 \tan A - \tan^3 A}{1 - 3\tan^2 A}$$

VIII ถ้า $t = \tan \frac{\theta}{2}$ แล้ว

$$\sin \theta = \frac{2t}{1+t^2}$$

$$\cos \theta = \frac{1-t^2}{1+t^2}$$

$$\tan \theta = \frac{2t}{1-t^2}$$

IX

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

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

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

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

X

$$\sin C + \sin D = 2 \sin \frac{C+D}{2} \cos \frac{C-D}{2}$$

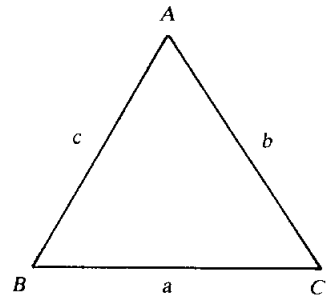
$$\sin C - \sin D = 2 \cos \frac{C+D}{2} \sin \frac{C-D}{2}$$

$$\cos C + \cos D = 2 \cos \frac{C+D}{2} \cos \frac{C-D}{2}$$

$$\cos C - \cos D = 2 \sin \frac{C+D}{2} \sin \frac{D-C}{2}$$

XI

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



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

$$b^2 = c^2 + a^2 - 2ca \cos B$$

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

พ.ท. $\triangle ABC = \frac{1}{2} ab \sin C$

$$= \frac{1}{2} bc \sin A$$

$$= \frac{1}{2} ca \sin B$$

$$= \sqrt{s(s-a)(s-b)(s-c)}$$

เมื่อ $s = \frac{1}{2}(a+b+c)$