PC12 Formulas and Identities

Is your calculator in DEG or RAD mode?

Reciprocal and Quotient Identities

$$\sin\theta = \frac{1}{\csc\theta} \qquad \csc\theta = \frac{1}{\sin\theta}$$

$$\cos\theta = \frac{1}{\sec\theta} \qquad \sec\theta = \frac{1}{\cos\theta}$$

$$\tan\theta = \frac{1}{\cot\theta} \qquad \cot\theta = \frac{1}{\tan\theta}$$

$$\tan\theta = \frac{\sin\theta}{\cos\theta} \qquad \cot\theta = \frac{\cos\theta}{\sin\theta}$$

Pythagorean Identities

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

$$1 + \cot^2\theta = \csc^2\theta$$

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

$$\sin\theta = \frac{y}{r} \qquad \cos\theta = \frac{x}{r} \qquad \tan\theta = \frac{y}{x}$$

Compound Angle

$$\sin(\mathrm{A} + \mathrm{B}) = \mathrm{sinAcosB} + \mathrm{cosAsinB} \qquad \sin(\mathrm{A} - \mathrm{B}) = \mathrm{sinAcosB} - \mathrm{cosAsinB}$$

$$\cos(\mathrm{A} + \mathrm{B}) = \mathrm{cosAcosB} - \mathrm{sinAsinB} \qquad \cos(\mathrm{A} - \mathrm{B}) = \mathrm{cosAcosB} + \mathrm{sinAsinB}$$

$$\tan(\mathrm{A} + \mathrm{B}) = \frac{\mathrm{tanA} + \mathrm{tanB}}{1 - \mathrm{tanAtanB}} \qquad \tan(\mathrm{A} - \mathrm{B}) = \frac{\mathrm{tanA} - \mathrm{tanB}}{1 + \mathrm{tanAtanB}}$$

Double Angle

$$\sin(2\mathrm{A}) = 2\mathrm{sinAcosA} \qquad \cos(2\mathrm{A}) = \cos^2\mathrm{A} - \sin^2\mathrm{A}$$

$$\tan(2\mathrm{A}) = \frac{2\mathrm{tanA}}{1 - \tan^2\mathrm{A}} \qquad \cos(2\mathrm{A}) = 2\cos^2\mathrm{A} - 1$$

$$\cos(2\mathrm{A}) = 1 - 2\sin^2\mathrm{A}$$

arc length = θ x r

degrees → radians x $\frac{\pi}{180°}$

radians → degrees x $\frac{180°}{\pi}$

$$\sin\theta = \sin(180° - \theta)$$

$$\cos\theta = \cos(360° - \theta)$$

$$\tan\theta = \tan(180° + \theta)$$

$$y = \pm amp\left(\sin\left(\frac{2\pi}{per}(x - P.S.)\right)\right) + S.A.$$

amplitude = $\frac{max - min}{2}$

sinusoidal axis = $\frac{max + min}{2}$

Quadratic Formula

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

Exponents and Logs

$$f(x) = \mathrm{a}\log_c\big(b(x-h)\big) + k$$

$\log_a c = b \leftrightarrow a^b = c$	$\log_a x + \log_a y = \log_a(xy)$
$\log_a c^n = n\log_a c$	$\log_a x - \log_a y = \log_a\left(\frac{x}{y}\right)$
$\log_a c = \frac{\log c}{\log a}$	$\log_c c^x = x$
$\ln x = \log_e x$	$\log_c 1 = 0$
$(x^a)(x^b) = x^{a+b}$	$(x^a)^b = x^{ab}$

Perms and Combs

nPr = $\frac{n!}{(n-r)!}$	**nCr =** $\frac{n!}{(n-r)!r!}$