Final Info Sheet

Definition of a periodic function

$f(x+p)=f(x)$

Basic Identities

$\tan\theta=\dfrac{\sin\theta}{\cos\theta}\quad \sec\theta=\dfrac{1}{\cos\theta}\quad \csc\theta=\dfrac{1}{\sec\theta}$

Definition of an odd/even function

$f(-x)=f(x)-Even$

$f(-x)=-f(x)-Odd$

Period for Trig Functions

Sine, Cosine 2π or 360°

Tangent π or 180°

Inverse Trig Function Domain: Ranges

Sine - Domain [-1,1]

Range $\left[-\dfrac{\pi}{2},\dfrac{\pi}{2}\right]$ or $\left[-90^\circ,90^\circ\right]$

Cosine - Domain [-1,1]

Range $[0,\pi]$ or $\left[0^\circ,180^\circ\right]$

Tangent - Domain $\mathbb{R}$

Range $\left[-\dfrac{\pi}{2},\dfrac{\pi}{2}\right]$ or $\left[-90^\circ,90^\circ\right]$

Product to Sum Identities

$\sin\alpha\sin\beta=\dfrac{1}{2}\left[\cos(\alpha-\beta)-\cos(\alpha+\beta)\right]$

$\cos\alpha\cos\beta=\dfrac{1}{2}\left[\cos(\alpha-\beta)+\cos(\alpha+\beta)\right]$

$\sin\alpha\cos\beta=\dfrac{1}{2}\left[\sin(\alpha+\beta)+\sin(\alpha-\beta)\right]$

$\cos\alpha\sin\beta=\dfrac{1}{2}\left[\sin(\alpha+\beta)-\sin(\alpha-\beta)\right]$

Pythagorean Identities

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

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

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

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

Co-Function Identities

$\sin(90^\circ-\theta)=\cos(\theta)$

$\cos(90^\circ-\theta)=\cos(\theta)$

Even/Odd Identities

$\sin(-\theta)=-\sin(\theta)$

$\cos(-\theta)=\cos(\theta)$

$\tan(-\theta)=-\tan(\theta)$

Other Trig Functions

$\tan\theta=1/\cot\theta$

$\sec\theta=1/\cos\theta$

$\csc\theta=1/\sin\theta$

Sum and Difference Identities

$\sin(\alpha\pm\beta)=\sin(\alpha)\cos(\beta)\pm\cos(\alpha)\sin(\beta)$

$\cos(\alpha\pm\beta)=\cos(\alpha)\cos(\beta)\mp\sin(\alpha)\sin(\beta)$

Half Angle Identities

$\sin\dfrac{\theta}{2}=\pm\sqrt{\dfrac{1-\cos\theta}{2}}\quad \cos\dfrac{\theta}{2}=\pm\sqrt{\dfrac{1+\cos\theta}{2}}$

Law of Sines

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

Law of Cosines

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

SOH CAH TOA

$\sin=\dfrac{o}{h}\quad \cos=\dfrac{a}{h}\quad \tan=\dfrac{o}{a}$

Exponential Functions & Logs

$y=B^x\rightarrow\log_B y=x$

Double Angle Identities

$\sin2\theta=2\sin\theta\cos\theta$

$\cos2\theta=\cos^2\theta-\sin^2\theta=$

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

$1-2\sin^2\theta$

$\tan2\theta=2\tan\theta/1-\tan^2\theta$

De Moivre's Formula

$(\cos\theta+i\sin\theta)^n=\cos n\theta+i\sin n\theta$

Euler's Formula

$e^{i\theta}=\cos\theta+i\sin\theta$