

Trig & Exponential / Logarithmic Functions

Sept

Housekeeping (Corrections)

Test #1 is September 26 not September 25

Test #4 is November 14 not November 7

In the beginning, it was the chord function



chord

Major Trig Functions

$\sin(x)$

$\tan(x)$

$\csc(x)$

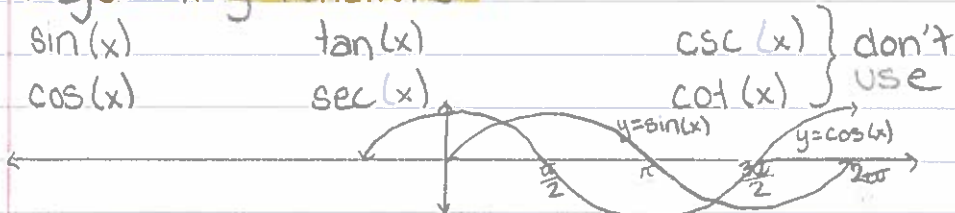
don't

$\cos(x)$

$\sec(x)$

$\cot(x)$

use



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

Trig Identities

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

$$\cos(2x) = \cos^2(x) - \sin^2(x)$$

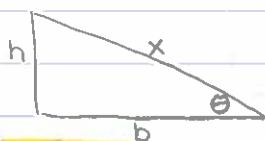
$$1 + \tan^2 x = \sec^2 x$$

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

$$\sin(2x) = 2\sin(x)\cos(x)$$

$$\cos(2x) = 2\cos^2(x) - 1$$

$$\tan(2x) = \frac{\sin(2x)}{\cos(2x)} = \frac{2\sin(x)\cos(x)}{\cos^2(x) - \sin^2(x)}$$



$$b^2 + h^2 = x^2$$

$$\sin \theta = \frac{h}{x}$$

$$\cos \theta = \frac{b}{x}$$

$$\tan \theta = \frac{h}{b}$$

Radians

$$\text{Circumference} = 2\pi$$

$$\therefore 360^\circ = 2\pi \text{ radians}$$

Special Values

$$\sin(\frac{\pi}{2}) = 1$$

$$\sin(0) = 0$$

$$\sin(\frac{\pi}{4}) = \frac{1}{\sqrt{2}}$$

use special triangles

$$\cos(\frac{\pi}{2}) = 0$$

$$\cos(0) = 1$$

$$\cos(\frac{\pi}{4}) = \frac{1}{\sqrt{2}}$$

$$\sin(\frac{\pi}{3}) = \frac{\sqrt{3}}{2}$$

$$\sin(\frac{\pi}{6}) = \frac{1}{2}$$

$$\cos(\frac{\pi}{3}) = \frac{1}{2}$$

$$\cos(\frac{\pi}{6}) = \frac{\sqrt{3}}{2}$$



Logarithms

$$\ln(e) = 1$$



$$a > 0, \log_a x = \frac{\ln x}{\ln a}$$

$$a^x = e^{x \ln a}$$

$$\log_a(a^x) = x$$

$$e^{\ln a} = a$$