Periodic Functions

Periodic Function: repeats a pattern of y-values (outputs) at regular intervals

Cycle: may begin at any point in a graph

Period: is the horizontal length of one cycle.

Special Right Angles

45-45-90

h = sqrt 2 times /

30-60-90

h = 2 times s

/= sqrt 3 times s

s = short leg

/= long leg

Properties Of Sine Functions

y = *a* sin *b* theta

period = 2pi/*b*

|*a*| = amplitude

b = number of cycles (0 to 2pi)

Quadratic Functions

Standard Form

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

ax^2

Quadratic term

bx

Linear term

c

constant term

Exponential Growth & Exponential Decay

b= 1 + r

b>1 = epon. growth

When b<1, b is a decay factor

x-axis = asymptote

0<b<1

b= 1+(-r)

Exponential Growth & Exponential Decay (cont)

$y=ab^x$

b= growth factor

r= increase in rate

e & Its Importance

$A = Pe^{rt}$

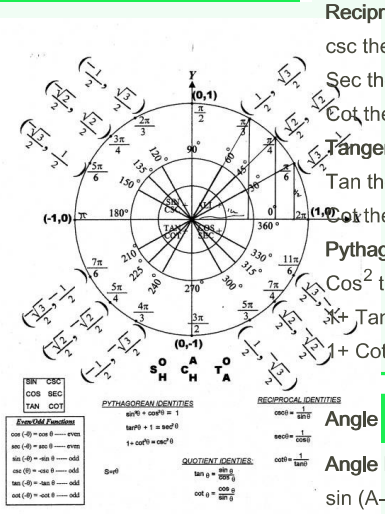
A= amount in account

P=principal (what you start with)

r = rate in interest (annually)

t= time (in years)

Unit Circle



radian 2pi, tangent 0

radian pi/6, tangent sqrt 3/3

radian pi/4, tangent 1

radian pi/3, tangent sqrt 3

radian pi/2, tangent undefined

radian 2pi/3, tangent -sqrt 3

radian 3pi/4, tangent -1

radian 5pi/6, tangent -sqrt3/3

radian pi, tangent 0

radian 7pi/6, tangent sqrt3/3

radian 5pi/4, tangent 1

radian 4pi/3, tangent sqrt3

radian 3pi/2, tangent undefined

radian 5pi/3, tangent -sqrt3

radian 7pi/4, tangent -1

radian 11pi/6, tangent sqrt3/3

Sine, Cosine, Tangent

Sine = opp./adj.

Cosine = Adj./Hypo.

Tangent = Opp./Adj.

Mazimun & Minimum

$y = ax^2+bx+c$

AOS: = x = -b/2a

1. vertex
2. c
3. another point

Area= length times width

Trigonometric Identities

Reciprocal Identities

csc theta = 1/sin theta

Sec theta = 1/ cos theta

Cot theta = 1/ tan theta

Tangent & Cotangent Identities

Tan theta = sin theta/ cos theta

Cot theta = cos theta/ sin theta

Pythagorean Identities

Cos^2 theta + Sin^2 theta = 1

1+ Tan^2 theta = Sec^2 theta

1+ Cot^2 theta = Csc^2 theta

Angle Identities

Angle Difference Identities

sin (A-B) = sinA cosB-cosA sinB

Angle Identities (cont)

cos (A-B) = cosA cosB + sinA sinB

tan (A-B) = tanA - tan B/1+ tanA tanB

Angle Sum Identities

sin (A+B) = sinA cosB + cosA SinB

cos (A+B) = cosA cosB - sinA sinB

tan (A+B) = tanA + tan B/1-tanA tanB

Identities

Double-Angle Identities

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

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

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

$\sin 2x = 2\sin x \cos x$

$\tan 2x = 2\tan x / 1 - \tan^2 x$

Half Angle Identities

sin A/2 = +/- sqrt 1-cosA/2

cos A/2 = +/- sqrt 1+cosA/2

tan A/2 = +/- sqrt 1-cosA/1+cosA

Logarithms

- to base b of a positive number y is defined as...

If $y=ab^x$, then logb y= x

Log In Life

$pH = -\log[H^+]$

b is not equal to 1

b must be positive

log of 0 or negative number = undefined

log= log base 10

Algebra II Final Cheat Sheet

by Melinluvsu via cheatography.com/21795/cs/4295/

Log Are Inverses Of Exponentials

1. Graph exponenetial function
2. Graph y = x
3. Reflect exponential function over y = x (reverse coodinates)

Properties Of Log

logb MN = logb M+ logb N <---- product property

logb M/N= logb M - logb N <---- Quotient property

logb M^x = x logb M <----Power property

WATCH OUT FOR ERRORS

logb a/logb c does not equal logb a/c

logb a times c does not equal logb a times logb c

Expanding Log

log2 7b = log2 7 + log 2 b

left to right = expand

right to left = simplify

Natural Log

Write 3ln6 - ln8 as a single natural log

ln 6^3/8 ---> ln 216/8 ---> ln 27

Solving Log Equations

Pt 1

solve log(3x+1) = 5

3x+1 = 10^5

3x+1 = 100000

3x = 99,999

x = 33,333

Pt 2

Solving Log Equations (cont)

Solve 2log x- log 3 = 2

log(x^2/3)=2

x^2/3 = 10^2

x^2= 2(100)

x=10sqrt3 or 17.32

Pairs Of Relations are Inverse Of Each Other

y = x - 7/2

y = 2x+7

y = 3x - 1

y = x +1/3

y = -x + 4

y = -x + 4/-1

y = x + 4/5

y = 5x - 4

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