

Algebra II Final

by vivianwalker via cheatography.com/21803/cs/4296/

Double Angle Identities

33.
$$\sin\left(\frac{\theta}{2}\right) = \pm \sqrt{\frac{1-\cos\theta}{2}}$$
 $\sin^2\theta = \frac{1-\cos2\theta}{2}$

34. $\cos\left(\frac{\theta}{2}\right) = \pm \sqrt{\frac{1+\cos\theta}{2}}$ $\cos^2\theta = \frac{1+\cos2\theta}{2}$

35. $\tan\left(\frac{\theta}{2}\right) = \pm \sqrt{\frac{1-\cos\theta}{1+\cos\theta}}$ $\tan\left(\frac{\theta}{2}\right) = \frac{1-\cos\theta}{\sin\theta} = \frac{\sin\theta}{1+\cos\theta}$

Half- Angle Identities

$$\sin(\frac{a}{2}) = \pm \sqrt{\frac{(1 - \cos a)}{2}}$$

$$\cos(\frac{a}{2}) = \pm \sqrt{\frac{(1 + \cos a)}{2}}$$

$$\tan(\frac{a}{2}) = \frac{1 - \cos a}{\sin a} = \frac{\sin a}{1 + \cos a}$$

Families of Function

Linear function



slope = my-intercept = bThe greatest exponent is 1.

Quadratic function $y = ax^2 + bx + c$

· 0 / x

parabola with axis of symmetry at $x = -\frac{b}{2a}$. The greatest exponent is 2.

$y = \sqrt{x - b} + c$



shift $y = \sqrt{x}$ horizontally b units shift $y = \sqrt{x}$ vertically c units. The variable is under the radical.

Absolute value function



shift y = |x| horizontally a units shift y = |x| vertically b units vertex at (a, b) The greatest exponent is 1.

Exponential function



growth for b > 1decay for 0 < b < 1The variable is the exponent

Rational functi



vertical asymptote at x = bhorizontal asymptote at y = cThe variable is in the denominator.

Identities

A. Reciprocal	B. Ratio	C. Pythagorean
csc = 1 sin csc = 1	tan = sin	sin² + cos² = 1
sin cos sec = 1		tan² + 1 = sec²
$\sec = \frac{1}{\cos} \qquad \tan \cot = 1$	cot <u>= cos</u> sin	1 + cot² = csc²
		1 - cos² = sin²
cot = 1 tan	cos = sin tan	1 - sin² = cos²
		sec² - 1 = tan²
sin = 1 csc	sin = cos cot	sec² - tan² = 1
		csc2 - 1 = cot2
cos = 1 sec	sin = cos tan	csc2 - cot 2 = 1
	cos = sin cot	
tan = _1		
cot		

Parent Functions

constant function

f(x) = a graph is a horizontal line identity function

f(x) = x points on graph have coordinates (a. a)

quadratic function

f(x) = x2 graph is U-shaped cubic function

f(x) = x3 graph is symmetric about the origin square root function

f(x) = sqrt(x) graph is in first quadrant reciprocal function

f(x) = 1/x graph has two branches absolute value function

f(x) = |x| graph is V-shaped

Exponential & Logarithmic

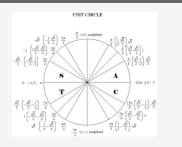
Logarithmic

y = In x

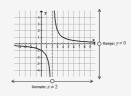
Exponential

y = bx

Unit Circle



Domain & Range



Domain: The domain of a function is the set of all possible input values (often the "x" variable), which produce a valid output from a particular function. It is the set of all real numbers for which a function is mathematically defined.

Range: The range is the set of all possible output values (usually the variable y, or sometimes expressed as f(x)), which result from using a particular function.



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