

# 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  $x=-\frac{h}{2a}$ 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 exponen

#### Rational functi



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

### Identities

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

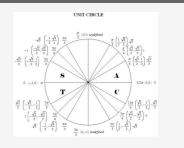
### **Exponential & Logarithmic**

Logarithmic

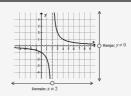
 $y = \ln x$ 

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.



By vivianwalker

cheatography.com/vivianwalker/

Published 3rd June, 2015. Last updated 11th May, 2016. Page 1 of 1. Sponsored by CrosswordCheats.com Learn to solve cryptic crosswords! http://crosswordcheats.com