Name: _____ Per. _____ Date _____

Inverse Functions: Exponential and Logarithmic Functions

Inverse Functions: Two functions f and g are inverses of each other if and only if $f(g(x)) = x$ for all x in the domain of g, and $g(f(x)) = x$ for all x in the domain of f.

EX) If g(x) is the inverse function of f(x) = 2x +1,	

*on a graph paper, graph both f(x) and g(x).

What is your observation?

The logarithm of y with base b, where $y > 0$, $b > 0$, $b \neq 1$, is defined as: $\log_b y = x$ if and only if $y = b^x$

$f(x) = 2^x$			$g(x) = \log_2 X$	
x	f(x)		x	g(x)
-2				-2
-1				-1
0				0
1				1
2				2

Graph both f(x) and g(x) on a graph paper.

a) What are the x- and y-intercepts for f(x) and g(x)

b) What is the line of symmetry between the graphs of f(x) and g(x)?

c) State the domain and range of each functions using interval notations.

	Domain	Range
$f(x) = 2^x$		
$g(x) = \log_2 X$		

d) State the end behavior of f(x) and g(x)

	As $x \rightarrow -\infty$	As $x \rightarrow \infty$
$f(x) = 2^x$		
$g(x) = \log_2 X$		