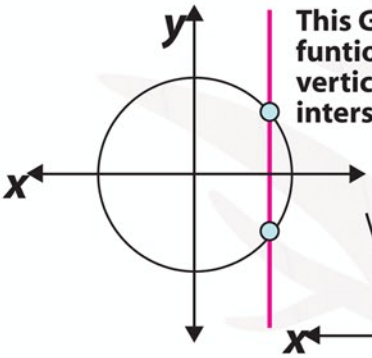
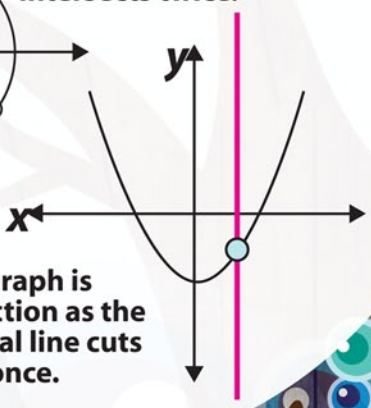
GRAPHS

WHAT IS A FUNCTION & RELATION

All Graphs we study are relations between **x** and **y**.
Some relations are called FUNCTIONS. In a Function every **x** value has only one **y** value. We use the vertical lines test to check.

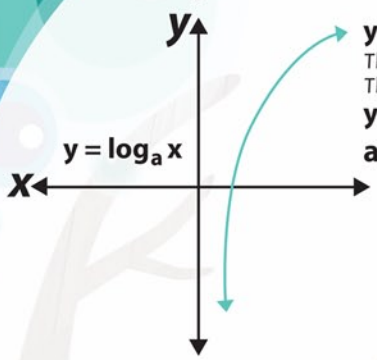


This Graph is not a funtion because vertical line intersects twice.

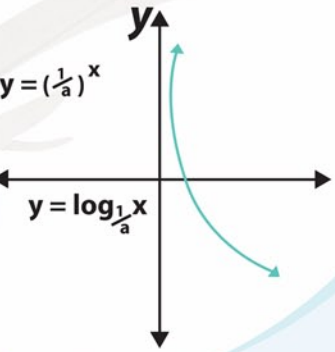


This graph is a function as the vertical line cuts only once.

LOG GRAPHS



$y = \log_a x$ *is the inverse of* $y = a^x$
The y axis is the asymptote
The function is increasing
$y = \log_a x$ *is a function*
$a > 1$



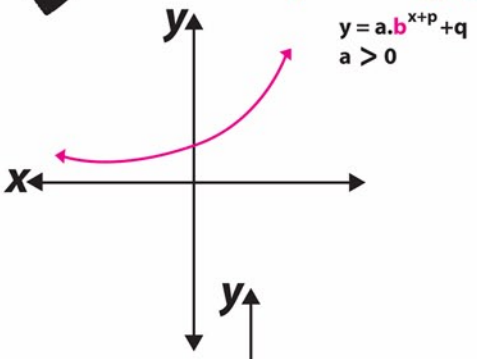
$y = \log_{\frac{1}{a}} x$ *is the inverse of* $y = (\frac{1}{a})^x$
The y axis is the asymptote
The function is decreasing
$y = \log_{\frac{1}{a}} x$ *is a function*
$0 < a < 1$

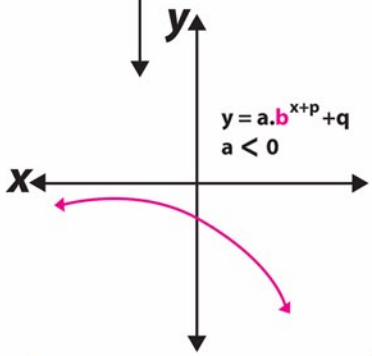
EXPONENTIAL GRAPHS

To Draw:
Identify basic graphs $y=b^x$
Is there a shift? (p or q)
Fill in asymptote $y=q$
y intercept (x=0)
x intercept (y=0) **(if it has one)**

EXPONENTIAL GRAPHS

increasing functions $b > 1$





decreasing functions $0 < b < 1$