Pre-Calculus 12

Name: KEY

Section 5.2 – Logarithms – Basics and Graphs

1. Convert into Logarithm Notation

$$f(x) = 4^{(x+2)} - 1$$

$y = 4^{x+2} - 1$

$y+1 = 4^{x+2}$

$\log_4(y+1) = x+2$

2. What are the Domain Restrictions on the following?

$$f(x) = \log_{(x-3)}(x+5)$$

$x+5 > 0$

$x > -5$

$x-3 \neq 1 \rightarrow x \neq 4$

$x-3 > 0 \rightarrow x > 3$

To cover all: $x > 3$ but $x \neq 4$

3. Graph the following logarithm. Identify Vertical Asymptote, Domain, Range, and at least twopoints.

$$y = -\log_3(x+4)$$

reflection of y-values

Horizontal shift left 4

VA shifts from $x=0 \rightarrow x=-4$

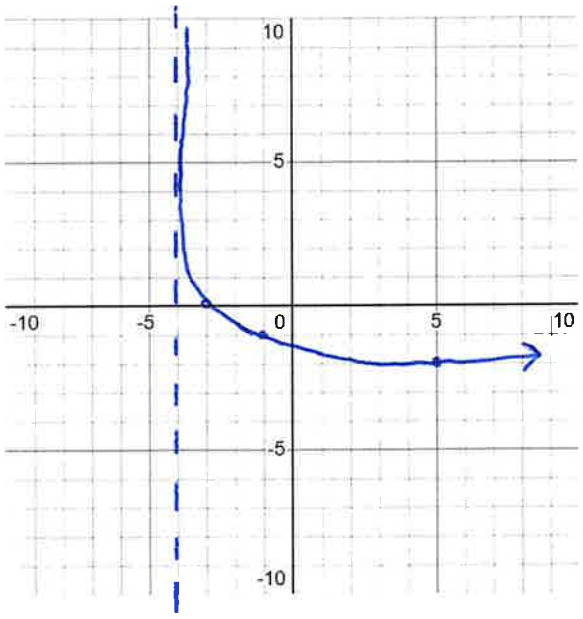
if $x=-1$

$y = -\log_3(3)$

$y = -1$

y-int: $-\log_3(0+4)$

$-\log_3 4$ ↑ difficult to calculate



$y = \log_3 x$ (Mother Graph)

$3^y = x$

$y = -\log_3(x+4)$

$(1,0) \rightarrow (-3,0)$

$(3,1) \rightarrow (-1,-1)$

$(9,2) \rightarrow (5,-2)$