Review for quiz

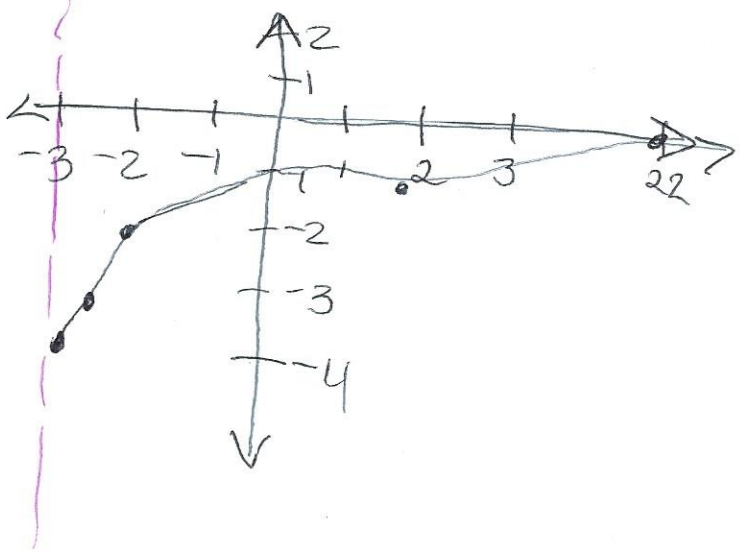
(16)

$f(x) = \log_5(x+3) - 2$

x	y
$\frac{1}{25}$ -3	-2 -2
$\frac{1}{5}$ -3	-1 -2
1 -3	0 -2
5 -3	1 -2
25 -3	2 -2

→

x	y
-2.96	-4
-2.8	-3
-2	-2
2	-1
22	0



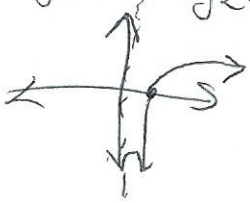
Vertical Asy.
$x = -3$

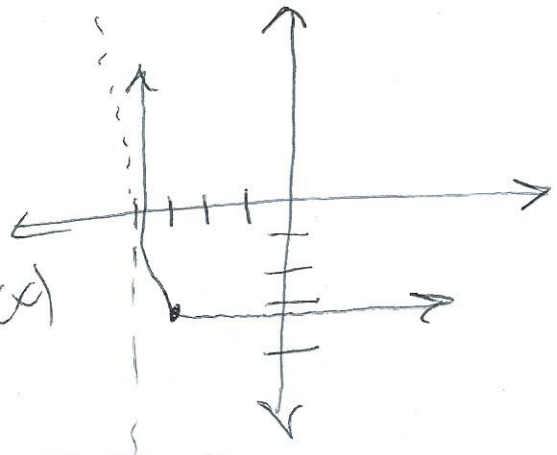
(18) $F(x) = -\log_2(x+4) - 3$

Use transformations rules

- $(x+4)$ you move the Asymptote to the left 3.
- reflect over the x-axis
- down 3 because of (-3)

Parent function Graph $g(x) = \log_2(x)$





Calculate the y-intercept.

$F(0) = -\log_2(0+4) - 3$
$= -\log_2(4) - 3$
$= -(2) - 3$
$= -5$

y-intercept $(0, -5)$

Properties of logarithm

Thu 4-18-19
Math 2311-Palmer
Pg 2

Recap

$3^x \cdot 3^y = 3^{x+y}$

Log

$\text{Log}_3(x) + \log_3(y) = \text{Log}_3(xy)$

If im adding I can condense to multiplication. (sum-to-product)

Recap

$\frac{3^x}{3^y} = 3^{x-y}$

Log

$\text{Log}_3(x) - \text{Log}_3(y) = \text{Log}_3\left(\frac{x}{y}\right)$

Difference-to-quotient

Log (Power property)

$\text{Log}_7(x^2) = 2\log_7(x)$

$f(x) = \text{Log}_b(x) \quad f^{-1}(x) = b^x \quad f(f^{-1}(x)) = \log_b(b^x) = x$

ex $\log_{12}(12^{57}) = 57$

$f^{-1}(f(x)) = b^{\log_b x} = x$

ex $3^{\log_3(7)} = 7$

Expand Completely

$\log_5\left(\frac{x^2 y}{w\sqrt{z}}\right) \rightarrow \log_5(x^2 y) - \log_5(w\sqrt{z})$

$\log_5(x^2) + \log_5(y) - [\log_5(w) + \log_5(\sqrt{z})]$

$2\log_5(x) + \log_5(y) - \log_5(w) - \log_5(\sqrt{z})$

$2\log_5(x) + \log_5(y) - \log_5(w) - \frac{1}{2}\log_5(z)$

Condense to a single Logarithm

$\log_3(x) - 2\log_3(y+z) + \frac{1}{3}(\log_3(w+1) + \log_3(y))$

$\log_3(x) - \log_3(y+z)^2 + (\log_3(w+1) + \log_3(y))^{1/3}$

$\log_3\left(\frac{x}{(y+z)^2}\right) + (\log_3((w+1)(y))^{\frac{1}{3}})$

$\log_3\left(\frac{x}{(y+z)^2} \cdot \frac{((w+1)(y))^{\frac{1}{3}}}{1}\right) = \log_3\left(\frac{x\sqrt[3]{(w+1)y}}{(y+z)^2}\right)$

Change of base formula.

$\log_a b = \frac{\log(b)}{\log(a)} = \frac{\ln(b)}{\ln(a)}$