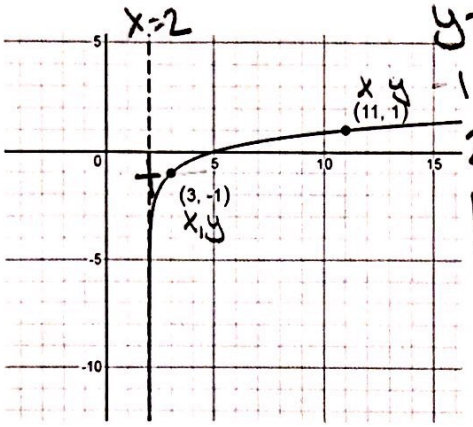
Precalc Unit 2 Day 4 Practice

1. Write a function for each for the following graphs given there are no horizontal or vertical compressions or stretches.



$y = \log_b x$ shift +3

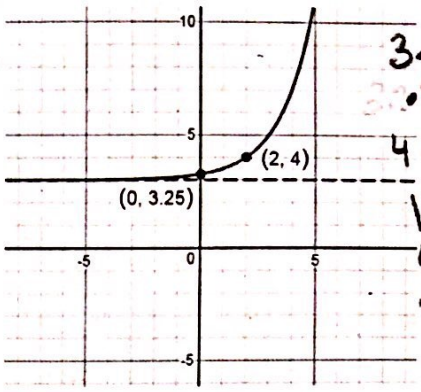
$1 = \log_b(11-2) - 1$

$2 = \log_b 9$

$b^2 = 9$

$b = 3$

$f(x) = \log_3(x-2) - 1$



$y = ab^x + c$

$3.25 = ab^0 + 3$

$.25 = a$

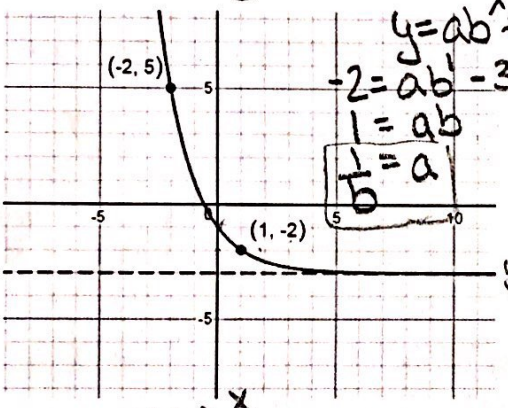
$4 = .25b^2 + 3$

$1 = .25b^2$

$4 = b^2$

$2 = b$

$y = .25(2)^x + 3$



$y = ab^x + c$

$-2 = ab^1 - 3$

$1 = ab$

$\frac{1}{b} = a$

$5 = \frac{1}{b}(b)^{-2} - 3$

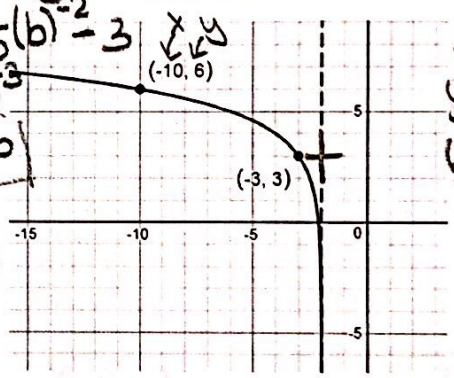
$8 = b^{-3}$

$\frac{1}{2} = b$

$a = 2$

$y = -3$

$y = 2\left(\frac{1}{2}\right)^x - 3$



$y = \log_b x$

$y = \log_b(-x-2) + 3$

$6 = \log_b(10-2) + 3$

$3 = \log_b 8$

$b^3 = 8$

$b = 2$

$y = \log_2(-(x+2)) + 3$

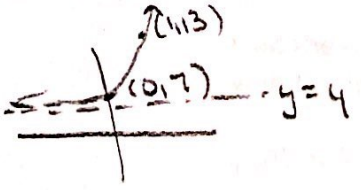
2. Find a function of the form $f(x) = ab^x + c$ given the following. As $x \to -\infty, f(x) \to 4$; $f(0) = 7$; $f(1) = 13$

$y = ab^x + c$

$7 = ab^0 + 4$ $\quad 13 = 3b^1 + 4$

$3 = a$ $\quad 9 = 3b$

$3 = b$



$y = 3(3)^x + 4$

3. Find a function of the form $f(x) = ab^x + c$ given the following. As $x \to \infty, f(x) \to -1$; $f(0) = -3$; $f(1) = -3.5$

$y = ab^x + c$

$-3 = ab^0 - 1$ $\quad -3.5 = ab^1 - 1$

$-2 = a$ $\quad -2.5 = -2b$

$\frac{5}{4} = b$

$y = -2\left(\frac{5}{4}\right)^x - 1$