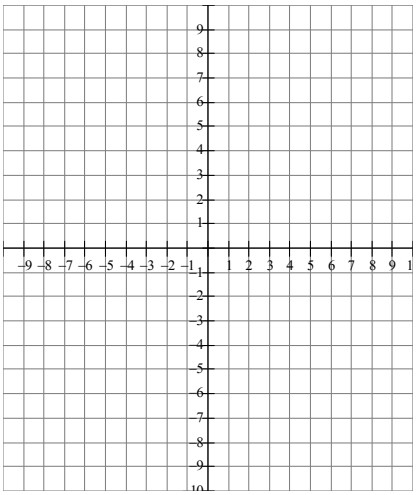
Pre-Calculus 12 Name : _____ Block : ____

Chapter 8 Assignment

1. Graph the function using transformations. $y = -\log_2\big(2(x+3)\big) - 1$



2. The function $y = \log_2 x$ is transformed to $y = a\log_2\big(b(x-h)\big) + k$. Write the new equation if the original function was reflected over the x-axis, horizontally stretched by a factor of 5, vertically translated up 2 and horizontally translated left 3.

3. Evaluate without a calculator. Show all your steps

$a)\ log_4 64$	b) $log_2 \frac{1}{32}$	c) $log_5 \sqrt{125}$

4. Find the inverse. Write your function in explicit form. Y=

a) $y = 20^x$	b) $y = log_3 x$

5. Find the domain, range, equation of asymptote, x-intercept and y-intercept for:
$y = 2\log_2(2x + 3) - 1$

Domain _____

Range _____

Aymptote _____

x-intercept y-intercept

6. Use the formula $pH = -\log(H^+)$ to solve the problem

   a) Find the pH of beer if $[H^+] = 3.16 \times 10^{-3}$ moles per liter

   b) Find the $[H^+]$ of vinegar if the pH is 3.1

7. The green solution has a pH of 6.9 and is 15 times more acidic than the blue solution. What is the pH of the blue solution?

8. Simplify

a) $log_2 12 - log_2 3$	b) $log_5 10 + log_5 75 - (log_5 2 + log_5 3)$
c) $\frac{1}{2} log_2 16 - \frac{1}{3} log_2 8$	d) $2log_4 2 - 2log_4 4 - log_4 \frac{1}{4}$

9. Write each expression as a single logarithm in simplest form. State any restrictions on the variable.

a) $\log_7 x^2 + \log_7 x - \frac{5\log_7 x}{2}$

b) $\log_5(2x-2) - \log_5(x^2+2x-3)$

10. Solve (3 decimal places) $2^{x+3} = 17^x$

11. Solve (3 decimal places) $4^{x+1} = 5^{x-2}$

12. What is the half-life, to the nearest month, of a radioactive isotope if it takes 7 years for 560 grams to decay to 35 grams?

13. Solve $\log_4(x+2) + \log_4(x-1) = 1$

14. Solve $\log(x-3) + \log(x-2) = \log(2x-6)$

15. Solve $\log_3(3x-1) - \log_3(x-1) = 4$