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



2. State the domain, range, and equation of the vertical asymptote and find the x – intercept and y – intercept of the logarithmic function in question #1.

Domain:	Range:
Vertical asymptote:	

x – intercept

y-intercept

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

4. Evaluate without a calculator. Show all of your work.

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

5. State the domain, range, and equation of the vertical asymptote and find the x – intercept and y – intercept of the following logarithmic function $y = -4 \log_2(3x - 1) + 5$

Domain:	Range:
Vertical asymptote:	
x – intercept	y-intercept

6. Use the *pH* formula to solve each problem. $pH = -\log[H^+]$

a) Find the pH of eggs if $[H^+] = 1.6 \times 10^{-8}$ moles per liter

b) Find the hydrogen ion concentration $[H^+]$ of vinegar if its pH = 3.1

7. The green solution has a pH = 3.8 and is 15 times more acidic than the blue solution. What is the pH of the blue solution?

8. Use the laws of logarithms to simplify and evaluate each expression. (Evaluate without a calculator).

a) $log_2 48 - log_2 6$

b)
$$log_39 + log_318 - (log_33 + log_32)$$

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. Express your answer accurate to 3 decimal places.

a) $22^x = 3^{x-1}$ b) $4^{x+1} = 5^{x-2}$

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

12. Solve. State and check your answer(s) against any restriction(s).

a) $\log_4(x+2) + \log_4(x-1) = 1$

b) $\log(x - 3) + \log(x - 2) = \log(2x - 6)$

c) $\log_3(3x - 1) - \log_3(x - 1) = 4$

Additional Practice:

p.416 #2, 4, 5, 9 – 15, 18 – 21