Name:_____ date:_____

Pre Calculus 12 HW Section 7.6 Graphing Logarithmic Functions:

1. How do you determine the vertical asymptote of a logarithmic function? Explain:

2. Suppose you are given a logarithmic function in the form: $y = A\log_B Cx + D$, how do you determine whether if the function opens to the left or right? Explain:

3. Suppose you are given a logarithmic function in the form: $y = A\log_B Cx + D$, how do you determine whether if the function opens to the UP or DOWN? Explain:

4. What does it mean that exponential graphs are inverses of logarithmic graphs?

5. Given the exponential function $y = 3 \cdot 5^{2x} + 4$, what is the inverse logarithmic function?

6. Suppose the point (a,b) is on the exponential function $y = A \cdot B^{Cx} + D$, what will this coordinate be on the corresponding logarithmic function?

7. Are these two graphs the same? $y = -A\log_B x + D$ vs $y = A\log_{\frac{1}{B}} x + D$? Explain:

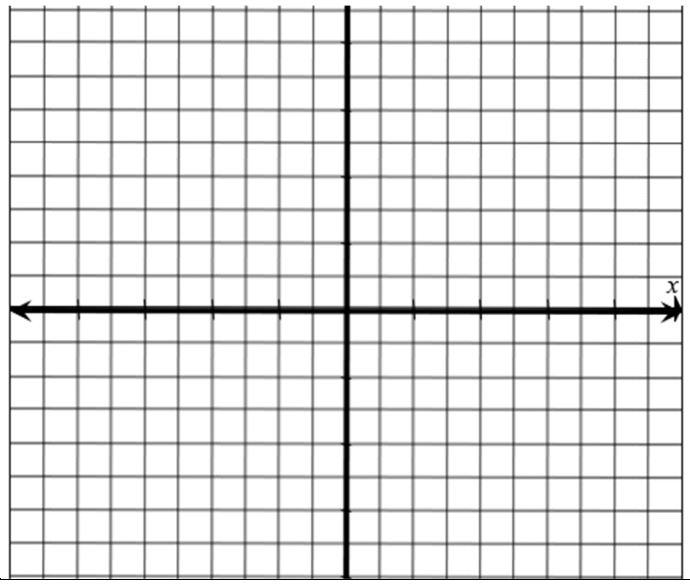
8. Suppose you are given the function $y = \log_2(3x + 2) - 4$, how would you determine which "x" values to use when making a table of values? Explain:

9. Given each logarithmic function below, state the equation of the vertical asymptote, coordinates of the "X" intercept, which way the graph opens (LEFT/RIGHT/UP/DOWN). Indicate also the domain and range.

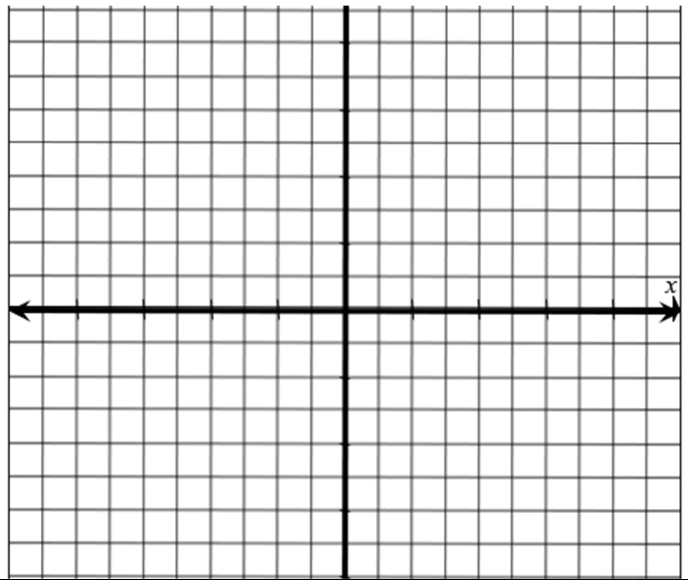
a) $y = 2\log_{10}(x) + 4$	b) $y = 3\log_{0.4}(x+5) - 2$
c) $y = -3\log_{4}(1-x) + 2$	d) $y = -2\log_{\frac{2}{3}}(x-4) + 1$
e) $y = 4\log_{\frac{4}{5}}(5-2x) - 3$	f) $y = -\log(3-x) + 1$
g) $y = -5\log_{7}(2x-3) - 1$	h) $y = \log_{2} x^{2}$
i) $y = 8\log_{\sqrt{2}} x^{2} - 4$	j) $y = -2\log_{2}\sqrt{x} + 3$

10. Graph the following logarithmic functions. Label the vertical asymptotes, x-intercept, y-intercept (if any), and several points on the graph. Adjust your increments to fit your function in the graph provided

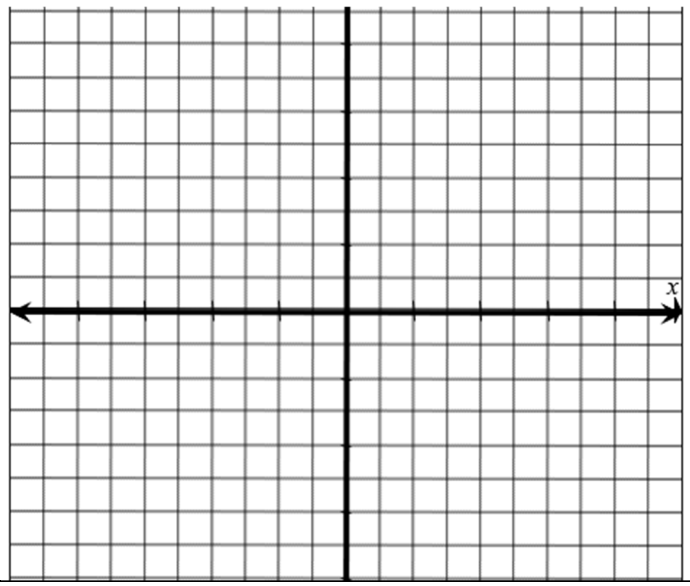
a) $y = \log(3x+1) - 2$



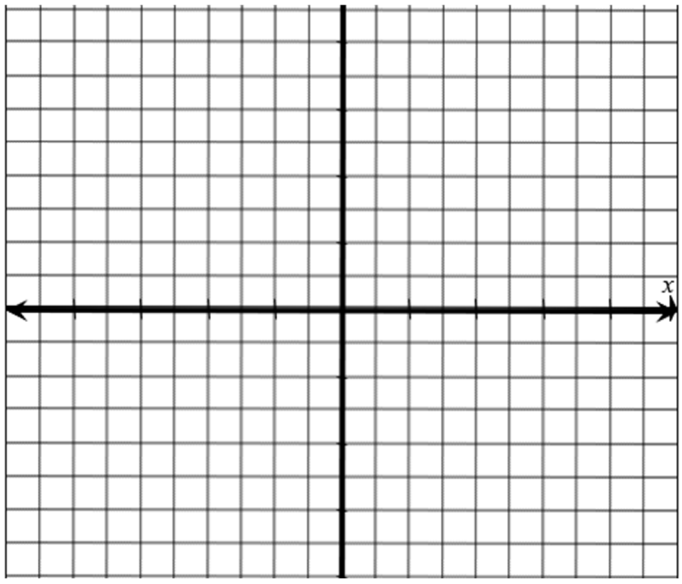
b) $y = \log_2(x-6) - 1$



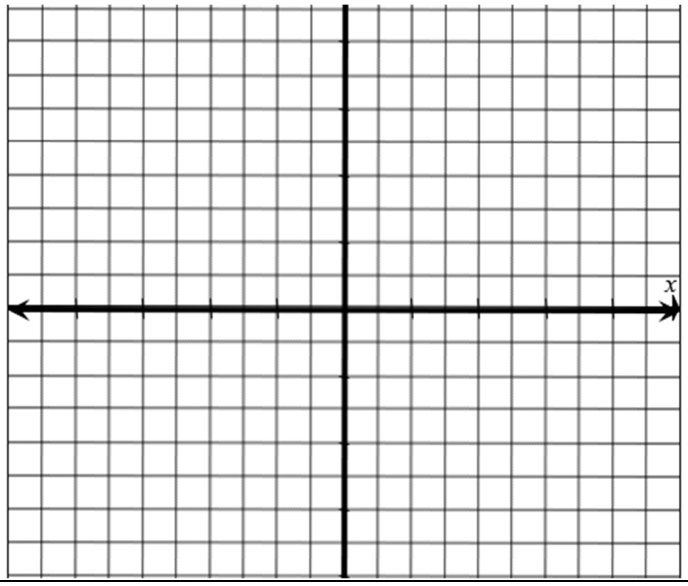
c) $y = \log_{\frac{1}{2}}(3-2x) - 1$



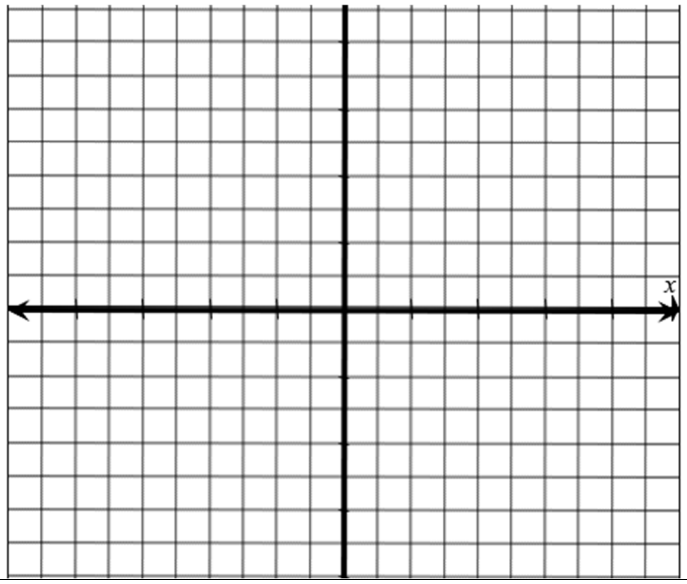
d) $y = -\log_3(4x+1) - 2$



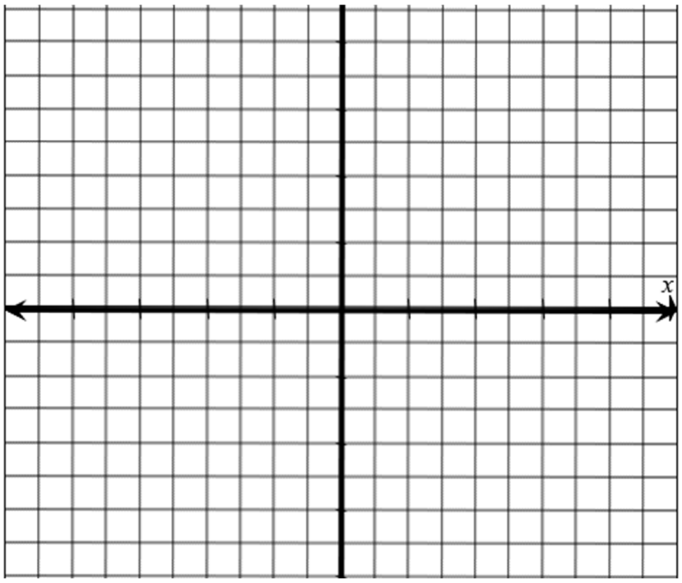
e) $y = -\log_3(2-3x)+3$



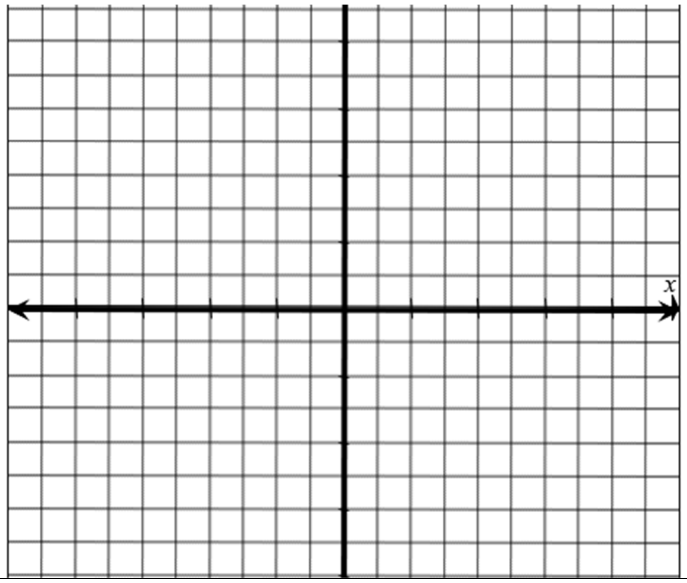
f) $y = -2\log_{\sqrt{3}}(3x)+1$



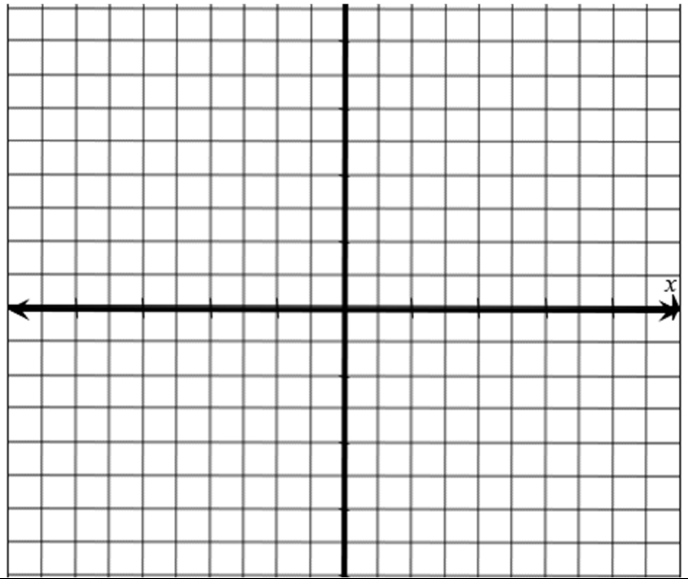
g) $y = \log_4 x^2 - 1$



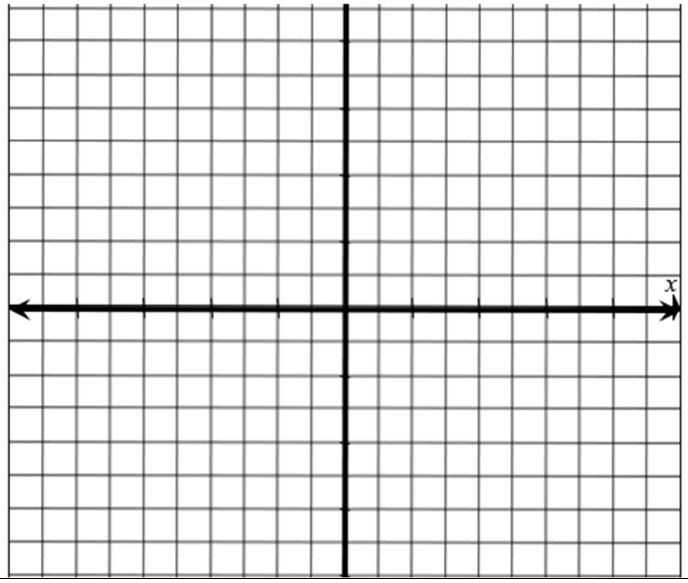
h) $y = \log_4(x^2+2x+1)-3$



i) $y = -2\log_{\frac{1}{3}}(3x+1)$



j) $y = \log_8\left(x^3+3x^2+3x+1\right)$



11. What transformation is required to go from $y = \log x$ to $y = \log\left(\frac{1}{x}\right)$?

12. What transformation is required to go from $y = \log_3 x$ to $y = \log_3 \frac{4}{x}$?

13. Given the graph of the logarithmic function in the form $y = \log_B(x+D)+E$, indicate the values of "B", "D", and "E". Show all your steps.