Name: _____

Math 1410: 11/22 Worksheet

1. Consider the function $y = 2^x - 3$. Use a graphing calculator, such as the one on `desmos.com/calculator`, to graph this function. Then graph the graph of its inverse by graphing $x = 2^y - 3$. Find an equation for its inverse, with y as a function of x by solving for y, then graph this equation to check that it is correct. What are the domain and range of the inverse? State all their asymptotes.

2. Do the same but with the function $y = e^{4-2x}$.

3. Sketch a graph of the function $a(b) = 2 - \log_4(x-1)$. What are its x- and y-intercepts and asymptotes? State its domain and range, whether it is increasing or decreasing, and whether it is concave up or concave down.

4. Find all zeroes, initial values, and asymptotes of the function $f(x) = 2 - 4^{3x}$.

5. Find all zeroes, initial values, and asymptotes of the function $g(x) = \log_3(x+3)$.

6. Find the domain of the function
$$h(x) = \frac{\ln(x-4)}{x^2 - 49}.$$

7. Rewrite the function $j(x) = 4\log_3(a) - \log_3(x)$ by combining logarithms. (Here $a \in \mathbb{R}$ is a constant.)