Directions: No Calculators Allowed. Find the inverse of the following functions. Be sure to use proper notation.

1. $f(x) = 3^{x-2} + 1$

2. $g(x) = 4(2)^{3x} - 5$

3. $h(x) = \frac{1}{5}e^{2x+3}$

4. $k(x) = 3\log(x+1) - 2$

5. $p(x) = -4\ln(2x)$

6. $m(x) = 2 - \log_3\left(\frac{x}{4}\right)$

7. Let $f(x) = 4(2)^{5x-6} + 3$ and let $g(x) = f^{-1}(x)$. For what value of x does $g(x) = 1$?

8. Let $h(x) = 5 - 2(3)^{7-x}$ and let $k(x) = h^{-1}(x)$. For what value of x does $k(x) = 5$?

9. Let $p(x) = 3\ln(2x-1)$ and let $m(x) = p^{-1}(x)$. For what value of x does $m(x) = 3$?

10. Let $f(x)=\log_3(x^2+x+2)-\log_3(x+6)$. What are all the values of x for which $f(x)<0$?

11. Let $g(x)=\log(x^2+3x-5)-\log(7x+16)$. What are all the values of x for which $g(x)>0$?

12. Let $h(x)=\ln(x^2+5)$ and let $k(x)=\ln(7x-7)$. What are all values of x for which $h(x)>k(x)$?

13. Let $p(x)=12+5(3)^{4x+1}$. What are all the values of x for which $p(x)\geq 57$?

14. **(Challenge)** Let $f(x)=\log_2(x^2+10x+24)-\log_2(2x-1)$. What are all values of x for which $f(x)>3$?