ASSIGNMENT 1

Due on: September 18 at 8:00 in the morning (submit before class begins). Questions:

- (1) Draw the graph of the following functions for $-2 \le x \le 2$:
- (1) Draw the graph of the following functions for 2 ≤ x ≤ 2.
 (a) x² x
 (b) x + 1/x
 (c) √1 x²
 (2) Find the inverse function of f(x) = x+2/x-1.
 (3) Use power and logarithm rules to prove the following equalities:
 - (a) $\log_4(2^t) = \frac{t}{2}$
 - (b) $\log_3 a = 2 \log_9 a$ (c) $2^{\log_{\sqrt{2}} 3} = 9$

 - (d) $\log_2 x + \log_4(2x^2) = 2\log_2 x + \frac{1}{2}$
- (4) Solve in x:
 - (a) $3^{(x^2)} = 9^x$ (Hint: apply \log_3 to both sides of the equation)
 - (d) b^{-1} (finite apply logg to both sides of the equation) (b) $\log_2(x-1) = \log_4(x+1)$ (Hint: raise both sides to the power of 2) (c) $2^x + 1 = 2^{x+2}$ (d) $e^x + e^{2x} = \frac{3}{4}$ (Hint: write $t = e^x$ and solve for t) Let $f(x) = 2^x x^2$.

(5) Let
$$f(x) = 2^x - x$$

- (a) Draw the graph of f(x) on the interval $\frac{1}{2} \le x \le 3$.
 - (b) Let f^{-1} be the inverse of f on the interval $[\frac{1}{2}, 3]$. Draw the graph of f^{-1} . (There is no need to find a formula for f^{-1} or prove that it exists.)