Name:_____ **Handout September 25**

1. (Multiple choice) A point $P(a, b)$ is on the graph of a function f means that:

   (a) $a = f(b)$

   (b) $f(b) - f(a) = 0$

   (c) $b = f(a)$

   (d) AROC $= (f(b) - f(a))/(b - a)$

2. Find the inverse functions to the following functions, or explain why no such function exists. (Be sure to specify the domain of the inverse function.)

   (a)

   $$\alpha(x) = \frac{10 - x}{10 + x}$$

   (b)

x	"please"	"excuse"	"my"	"dear"	"aunt"	"Sally"
$q(x)$	"()"	"^"	$\times$	$\div$	$+$	$-$

   (c)

   $$\text{ReLU}(x) = \begin{cases} x & \text{if } x \geq 0 \\ 0 & \text{if } x < 0 \end{cases}$$

3. If we know j is a one-to-one function, with $j(1) = 1$, $j(2) = 4$, $j(5) = 25$, and $j(6) = 30$. List four points that *must* lie on the graph of j^{-1}.

4. You have some money, and will be depositing it into the bank for several years at an interest rate of r. Put the following compounding methods in order from least-interest-gained to most-interest-gained.

   (a) Compounded monthly
   (b) Compounded continuously
   (c) Compounded quarterly
   (d) Compounded annually

5. After the birth of your first child, you are looking to start a college fund with \$10,000 you have saved. There are several banking options, and you want to start an account that will yield the most money in 18 years. Which option is best?

   (a) 5% annually, compounded annually
   (b) 4% annually, compounded continuously
   (c) 4.5% annually, compounded monthly
   (d) 4% annually, compounded quarterly

6. Your elderly grandfather reveals to you that he and five friends joined a tontine fifty-five years ago. This tontine carried 6% interest (compounded continuously) and is currently worth \$1.5 million. How much did each participant pay to join?