Math 1271 Quiz 1
January 30, 2014
Name: _______________________________
TA: _______________________________

NO CALCULATORS. NO HANDHELD DEVICES. NO BOOKS OR REFERENCE MATERIALS OF ANY KIND.
Time allowed: 20 minutes; Grader: Ashley Earls. Good luck!

1. (a) (15 points) Find the domain of \( f(x) = \ln(e^x - 3) \).

(b) (20 points) Find \( f^{-1}(x) \) and state its domain.

2. (15 points, no partial credit) Below is the graph of a function \( f \) with domain \( \mathbb{R} \) and target \( \mathbb{R} \).

Pick the correct statement.
(a) \( f \) is both one-to-one and onto.
(b) \( f \) is one-to-one but not onto.
(c) \( f \) is onto but not one-to-one.
(d) \( f \) is neither one-to-one nor onto.

*PLEASE SEE THE OTHER SIDE FOR MORE PROBLEMS.*
3. **(15 points, no partial credit)** True or false? If \( h(x) = (x + 1)(x^2 - 3x + 4) \), then 
\( x = -1 \) is a root of \( h(x) \) of multiplicity 1.

4. Let \( f(x) = \left[ -\frac{1}{2}x - 1 \right] \left[ \frac{x - 2}{x - 2} \right] \).

   (a) **(15 points)** Sketch a graph of \( f \) that includes the points \((0, -1)\) and \((4, -3)\).

   ![Graph of f(x)](graph.png)

   (b) **(20 points)** Find the largest \( \delta \) such that
   
   \[
   0 < |x - 2| < \delta \quad \Rightarrow \quad |f(x) + 2| < 0.4 .
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