Math 10860, Honors Calculus 2

Name:

1. Suppose that f is a one-to-one function, that is differentiable everywhere on its domain, with derivative never zero. Suppose also that there is a function F with $F' = f$.

   Set $G(x) = x f^{-1}(x) - F(f^{-1}(x))$. Verify that $G'(x) = f^{-1}(x)$. (**Remark**: so, if we know an antiderivative of f, we also know an antiderivative of f^{-1}.)

2. Suppose that $f : \mathbb{R} \to \mathbb{R}$ is continuous, invertible and satisfies $f^{-1} = f$. Prove that f has a fixed point (a number x such that $f(x) = x$).