Math 222 In class assignment 1: Inverse Functions & The Natural Logarithmic Functions

Name:_____

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Directions: Work in groups to complete the following problems.

1. Let $f(x) = \sqrt{x-2}$

   (a) Show that f is one to one.

   (b) Use the formula developed in class to find $(f^{-1})'(2)$.

   (c) Calculate $f^{-1}(x)$ and state the domain and range of f^{-1}.

   (d) Calculate $(f^{-1})'(2)$ from the formula in part (c) and check that it agrees with the result of part (b).

   (e) Sketch the graphs of f and f^{-1} on the same axes.

2. Differentiate $y = [ln(\tan(x)]^2$

3. Use logarithmic differentiation to find the derivative of $y = \frac{(x^3+1)^4 \sin^2(x)}{x^{1/3}}$

4. Evaluate the integral $\int \frac{\cos(x)}{2+\sin(x)} dx$