Math 105, Precalculus Name _____

Homework 2, Sections 2.3 & 2.4 Due by 1:00 pm, October 8, 2009

Show all work neatly. No work means no credit.

1. Let $f(x) = (x-1)^2 + 1$.
   a) Find $f(a)$.

   b) Find $f(a+h)$.

   c) Find and reduce the difference quotient $\frac{f(a+h) - f(a)}{h}$, where $h \neq 0$.

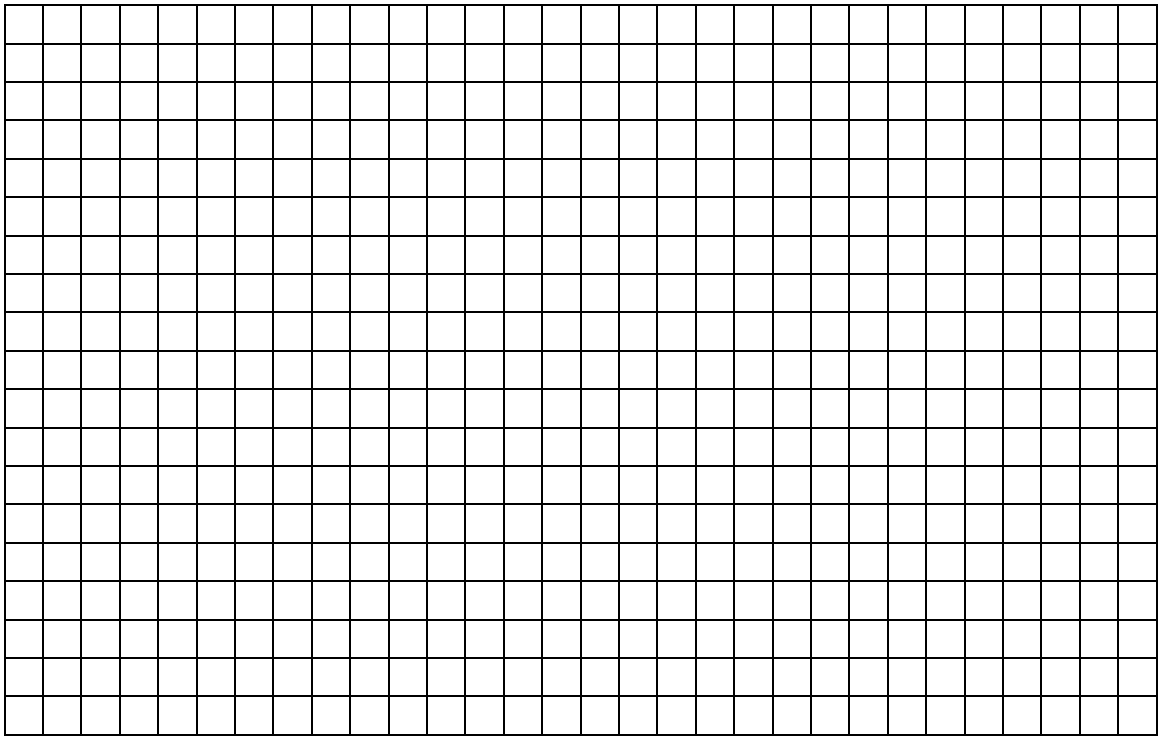
   d) Find the average rate of change of $f(x)$ between $x = 0$ and $x = h$.

2. Let the function f be $f(x) = \sqrt[5]{x}$. If the following transformations are applied to its graph (in the given order), write the equation for the final transformed graph: shift 3 units to the right, stretch vertically by a factor of 5, reflect in the *x*-axis.

3. Let $g(x) = (2x)^2 - 3$.

   a) Explain how the graph of this function is obtained from the graph of $f(x) = x^2$ by listing the function transformations in order.

   b) Graph the function $g(x) = (2x)^2 - 3$, not by plotting points but by first graphing the function $f(x) = x^2$ and then by applying the function transformations. Be sure to indicate your scale very carefully.



4. Determine whether the function $f(x) = \dfrac{x^2 + 1}{x^3 - 2x}$ is even, odd or neither. Show all work in making your determination.