Study Guide for Exam 2

1. You are supposed to be able to use the chain rule properly and precisely, even when the function is obtained as the composition of several functions. You should be able to handle the chain rule not only in the form of $\dfrac{dy}{dx} = \dfrac{dy}{du}\dfrac{du}{dt}\dfrac{dt}{dx}$ but also in the form of $\{h(f(g(x)))\}' = h'(f(g(x)))f'(g(x))g'(x)$.

2. You are supposed to be able to determine the exact values of the formulas involving the trigonometric and inverse trigonometric functions. You need to know the double angle formulas for sine, cosine, and tangent.

3. You are supposed to know how to compute the derivative of a function of the form $y = f(x)^{g(x)}$.

4. You are supposed to be able to determine the equation of the tangent line to the graph of a function implicitly defined, computing the derivative using the implicit differentiation.

5. You are supposed to be able to provide an approximation of the value of a function, using the linear approximation.

6. You are supposed to be able to determine when a particle is speeding up or down, whether it is accelerating or deccelerating, given its position function. You are also supposed to be able to compute the total distance travelled during the given period.

7. You are supposed to know how to provide the formulas for the trigonometric functions when the angles are given in the form of $\sin^{-1}(x), \cos^{-1}(x), \tan^{-1}(x)$.

8. You are supposed to be able to compute the derivatives of the hyperbolic functions, and also to determine their exact values.

9. FOUR related rates problems will be given in Exam 2. The problems are very silimar to the ones given in the Webassign, and also to the examples discussed in the textbook.