Quiz 6A, Calculus I - No Calculators

Dr. Graham-Squire, Spring 2014

Name: _____

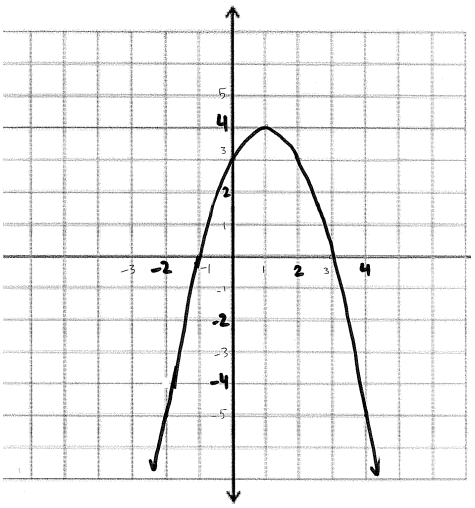
1. (4 points) Let $h(x) = \int_4^x \left(\frac{1}{t} - e^t + \frac{1}{1+t^2} \right) dt$.

   (a) Use an antiderivative to find an expression for $h(x)$ that does not involve an integral. Leave your answer in exact form (no decimals).

   (b) Use the Fundamental Theorem of Calculus (or your answer from (a)) to find $h'(x)$.

2. (3 points) (a) Use right endpoints and 4 subintervals (that is, find the Riemann sum R_4) to approximate the area under the curve $f(x) = 4 - (x-1)^2$ on the interval [0,4].

   (b) Is your answer an overestimate or an underestimate? Explain your reasoning.



3. (3 points) Calculate the indefinite integral (that is, the most general antiderivative) of

$$\int \frac{x + x^4 3^x + x^8}{x^4}\, dx.$$