3/31/2003 MA423 Numerical Analysis Name:_____
Dr. Lunsford Quiz 6 (20 Points Total)

Use the data given below to answer the following questions. Neatly show ALL of your work and CLEARLY indicate your answers. You may use your textbook.

x	$f(x)$
8.1	16.94410
8.3	17.56492
8.5	18.19056

(a) Approximate $f'(8.3)$ and $f'(8.5)$ using the most accurate formula available. Be sure to indicate what formula(s) you use (via its number in the text) and show how you are substituting into the formula(s). (6 points)

(b) Given that the data above was generated by the function $f(x) = x \ln x$, find an error bound for the absoulte error in your approximation of $f'(8.3)$ above and compare it to the actual error. (7 points)

(c) Given the additional data $f(8.7) = 18.82091$, approximate $\int_{8.1}^{8.7} x \ln x \, dx$ using the composite trapezoid rule. (4 points)

(d) Can you use the composite Simpson's rule for the computation in part (c)? Why or why not? (3 points)