Math. 250-04
Spring, 1999
R. B. Kearfott

Fourth Examination

Monday, Friday, April 30, 1999

Instructions: This exam should be done on your own paper. Your name should be on each sheet and on the back of the last sheet; the answers should appear written carefully and in order. If in doubt, show intermediate steps: Full credit may not be given, even for correct answers, unless work is arranged clearly. This exam is closed book. You may leave after handing in your exam paper, but be sure to check your answers carefully. Each entire problem is worth 25 points.

1. Compute $f'(x)$, if
$$f(x) = x^3 - x^2 + x - 1.$$

2. Compute $f'(x)$, if
$$f(x) = \ln(x^2 - x).$$

3. \$100 deposited in an account bearing 5% interest compounded continuously accrues to
$$A(t) = 100e^{.05t}$$
after t years.
   (a) Write down an expression for the rate of change of the amount in the account after t years.
   (b) Use this expression to calculate the number of dollars per year by which the account is increasing after 30 years.

4. Write down $f'(x)$, if
$$f(x) = x^3 \ln(x).$$