M. Rieffel Math 128a November 13, 1997
Second Midterm Exam

SHOW YOUR WORK COMPLETELY AND NEATLY. Total points = 60.

6 a) Explain briefly but precisely the strategy for obtaining the Adams- Bashforth method of order 2 (interpolating at 2 points).

15 b) Show that this method is given by $y_{k+1} = y_k + (h/2)\{3f_k - f_{k-1}\}$.

3 c) Define what is meant by the local truncation error for a multi-step method.

12 d) Derive the local truncation error formula for the above method.

11 e) Find the difference equation obtained by applying this method to $y' = \lambda y$. Derive the characteristic equation for the difference equation and find its roots.

4 f) Define what is meant by a strongly stable multi-step method.

9 g) Show that the above method is strongly stable.