In-Class Problem

Solve inviscid Burgers' equation for one time step using Beam-Warming implicit method for the initial data given in last class. Use Courant number = 1.

Delta Form

Some times it is better to write the equation for change in the variable from time level n to (n+1). Eq. (18) then becomes

$$-\frac{1}{4}\frac{\Delta t}{\Delta x}A^n_{j-1}\Delta u^{n+1}_{j-1} + \Delta u^{n+1}_{j} + \frac{1}{4}\frac{\Delta t}{\Delta x}A^n_{j+1}\Delta u^{n+1}_{j+1} =$$

$$-\frac{\Delta t}{\Delta x}\frac{F^n_{j+1} - F^n_{j-1}}{2} \qquad (20)$$