and \( R \) as the average of \( R_1 \) and \( R_2 \). This calculation, however, is trivial for this solution, since no damping due to bottom friction exists in the present solution, no energy is dissipated in breaking in linear theory, and no energy is transmitted past the shoreline. Therefore, in order that energy be conserved, the energy carried by the reflected wave must be equal and in opposite direction to the energy carried by the incident wave in steady state.

Since the boundary condition at the shoreward end of the domain is restricted to keep \( \eta \) bounded, the response at the shoreline may be estimated by extrapolating the surface displacement directly seaward of the shoreline by

\[
\eta^n = \eta^{n-1} + \frac{\eta^{n-1} - \eta^{n-2}}{\Delta x} \Delta x
\]  

which can easily be seen reduces to

\[
\eta^n = 2\eta^{n-1} - \eta^{n-2}
\]

where

\[
|\eta'| = \left| \frac{W^i}{\sqrt{f^i}} \right|
\]  

Additionally, from 6.45 the magnitude of the surface displacement in the domain may be calculated.

6.4 Model Tests and Examples

6.4.1 Response Over a Barfield in Front of a Wall

In order to verify the validity of the model formulated above, it will first be compared to a case that the model in the form of equation 6.4 can easily handle. This would be the case where the restriction

\[
\frac{\partial \eta}{\partial x} = 0
\]

is valid. This boundary condition is required for a wave field at a vertical wall. In the finite difference scheme, the boundary condition is applied by

\[
\eta^n - \eta^{n-1} = 0
\]