The entire process of repeated use of Richardson's extrapolation tech
nique can be represented in general form as

$$T(h/2^i, j) = \frac{4^j T(h/2^i, j-1) - T(h/2^{i-1}, j-1)}{4^j - 1}$$

(12.25)

where $i = 0, 1, 2 \ldots$ denotes the depth of division and $j \leq i$ denotes th
level of improvement.

We can further simplify the notation of Eq. (12.25) by defining

$$R_{ij} = T(h/2^i, j)$$

Thus, we have

$$R_{ij} = \frac{4^j R_{i, j-1} - R_{i-1, j-1}}{4^j - 1}$$

(12.2

Equation (12.26) is known as *Romberg integration formula*. Note th
this equation, when expanded, will form a lower-diagonal matrix. T
elements of the matrix **R** are computed row by row in the order in
cated in Fig. 12.5. The circled numbers indicate the order of comput
tions and the arrows indicate the dependencies of elements. An eleme
at the head end depends on the element at the tail end.