$$M[i,j] = \max \begin{cases} M[i-1,j] - \sigma \,(\text{if backtrack}[i-1,j] \neq \downarrow) \\ M[i-1,j] - \epsilon \,(\text{if backtrack}[i-1,j] = \downarrow) \\ M[i-1,j-1] + \text{SCORE}(x[i], y[j]) \\ M[i,j-1] - \sigma \,(\text{if backtrack}[i,j-1] \neq \leftarrow) \\ M[i,j-1] - \epsilon \,(\text{if backtrack}[i,j-1] = \leftarrow) \end{cases}$$