### Method 1

\[
\begin{pmatrix}
\text{Optimal values of dual variables} \\
\text{Row vector of original objective coefficients of optimal primal basic variables}
\end{pmatrix} = \begin{pmatrix}
\text{Optimal primal inverse}
\end{pmatrix}
\]

The elements of the row vector of the original primal objective coefficients must appear in the same order in which the basic variables are listed in the Basic-column of the simplex tableau. This point is explained in Example 4.2-1.

### Method 2

The optimal dual solution can be determined by solving the following equations:

\[
\begin{pmatrix}
\text{Optimal primal } z\text{-coefficient} \\
\text{(reduced cost) of any variable } x_i
\end{pmatrix} = \begin{pmatrix}
\text{Left-hand side of the } j\text{th dual constraint}
\end{pmatrix} - \begin{pmatrix}
\text{Right-hand side of the } j\text{th dual constraint}
\end{pmatrix}
\]

### 4.2 Primal-Dual Relationships

1. Constraint columns (left- and right-hand sides)
2. Objective \( z \)-row

**Constraint Column Computations.** At any simplex iteration, a left- or a right-hand side column is computed as follows:

\[
\begin{pmatrix}
\text{Constraint column in iteration } i
\end{pmatrix} = \begin{pmatrix}
\text{Inverse in iteration } i
\end{pmatrix} \times \begin{pmatrix}
\text{Original constraint column}
\end{pmatrix}
\]

(Formula 1)

**Objective \( z \)-Row Computations.** At any simplex iteration, the objective equation coefficient of \( x_i \) is computed as follows:

\[
\begin{pmatrix}
\text{Primal } z\text{-equation coefficient (reduced cost) of variable } x_i
\end{pmatrix} = \begin{pmatrix}
\text{Left-hand side of corresponding dual constraint}
\end{pmatrix} - \begin{pmatrix}
\text{Right-hand side of corresponding dual constraint}
\end{pmatrix}
\]

(Formula 2)