EXAMPLE: ISENTROPIC COMPRESSION OF AN IDEAL GAS

Air is compressed in a car engine from 22°C and 95 kPa in a reversible and adiabatic manner. If the compression ratio of this engine \( \nu_1/\nu_2 = 8 \), determine the final temperature of the air by accounting for the variations of specific heats with temperature.

\[
\begin{align*}
\text{Process definition} \\
\text{Exact analysis} \\
\text{Using the ideal gas properties of air:}
\end{align*}
\]

\[
\Rightarrow \quad \nu_{r2} =
\]
The specific volume ratio of the air at state 2 does not correspond to any temperature given in the table. Interpolation is needed to determine the temperature of the final state.

⇒ $T_2 =$