**Problem 3.5**  Apply nodal analysis to determine the voltage $V_R$ in the circuit of Fig. P3.5.

**Figure P3.5:** Circuit for Problem 3.5.

**Solution:** At node $V$:

\[
\frac{V - 12}{4} + \frac{V}{2} + \frac{V - 8}{4} = 0,
\]

which leads to

\[
V = 5 \text{ V}.
\]

Hence,

\[
V_R = 12 - V = 12 - 5 = 7 \text{ V}.
\]