A gaseous system expands from volume V_1 to V_2 under isobaric conditions. Calculate the work done in the process.

Solution:

By definition, the work done by a gas

$$W = \int_{V_1}^{V_2} p\, dV$$

If the process is isobaric ($p =$ const), we get

$$W = p \int_{V_1}^{V_2} dV = p(V_2 - V_1)$$

Answer: $W = p(V_2 - V_1)$