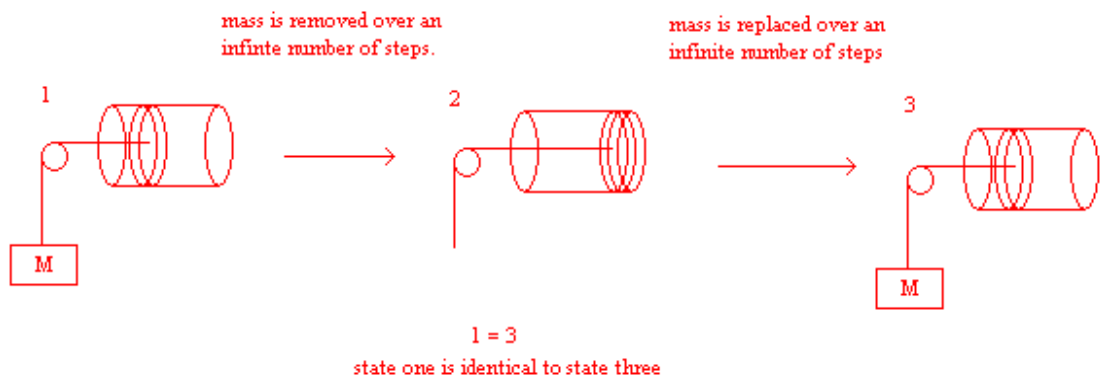


Reversible Processes

1. What is a reversible process?

A reversible process is one completed over an infinite number of steps. In this situation, a constant equilibrium between system and surroundings is maintained. This means that in a reversible process there is no net heat loss or gain.



It is also really important to note that reversible processes are synonymous with equilibrium processes.

2. In reality, the heat **released** during the compression is more than the heat **absorbed** during an expansion. Meaning that there is always going to be heat loss.

1. Why are these processes useful to study?

These processes are analyzed because they tell us the maximum amount of work a system could theoretically do.

$$W_{\text{reversible}} = W_{\text{maximum}}$$

3. What is the equation for work for a reversible process?

$$w_{\text{reversible}} = -nRT \ln \left| \frac{V_2}{V_1} \right|$$

or

$$w_{\text{reversible}} = -nRT \ln \left| \frac{P_1}{P_2} \right|$$

Because these processes typically happen isothermally

$$q_{\text{reversible}} = -w_{\text{reversible}}$$