Heat Engines and Entropy

At the end of this chapter you should be able to...

- Describe heat engine and refrigerator efficiency using a Carnot Cycle.
- Determine changes in entropy for a variety of processes(Temperature Changes, Phase Changes, Volume Changes, etc.) using the definition of entropy of $dS = \frac{dq_{rev}}{T}$.
- Determine the natural direction of processes using the second law of thermodynamics.
- Use the Clausius Inequality to to describe the natural direction of processes.
- Use the Third Law of Thermodynamics to calculate absolute entropies of pure substances.
- Calculate entropy changes in chemical reactions at various temperatures using standard data available in thermodynamic tables.
- Describe efficiencies of energy production using heat engine concepts.