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Physics 2C, Winter 2020

Reading Assignment due Friday 2/14: Submit via Gradescope by 8:00am

1. Stop-to-Think 21.4 on page 583 of the textbook. In particular:

   (a) What's wrong with the energy-transfer diagram? Does it violate the first law, the second law, or both?

   (b) Fix the energy-transfer diagram so that it represents a possible refrigerator. There are two ways of doing this by changing one value in the diagram – you may do either one.

   (c) Find the coefficient of performance K for the refrigerator you sketched out in part (b).

2. On a hot summer day, a Carnot (ideal) refrigerator takes heat from inside a house at $25.0°$C and delivers it to the outside at $35.0°$C.

   (a) What is the coefficient of performance of this fridge?

   (b) For every 1.0 kJ of energy used by the refrigerator (work input into the system, from the fridge being plugged in), how many kJ of heat are taken out of the house?

   (c) For every 1.0 kJ of energy used by the refrigerator, how many kJ of heat are delivered to the outside of the house?

For extra practice (not due): From Chapter 21 of Knight, 4th edition: Conceptual Questions: 6-9. Exercises: 22-33.