

Homework of General Physics III

November 13, 2024

1. Determine the entropy change of an object of mass m and specific heat c that is cooled rapidly (and irreversibly) at constant pressure from T_H to T_C .
2. Suppose we place 50 g of ice at 0°C in contact with a heat reservoir at 20°C . Heat spontaneously flows from the reservoir to the ice, which melts and eventually reaches a temperature of 20°C . Find the change in entropy of (a) the ice and (b) the universe.
3. One mole of an ideal monatomic gas ($\gamma = 5/3$) is taken around the cycle shown in the figure with $V_2 = 4V_1$. (a) Calculate the change in entropy for each segment. (b) Find the total change in entropy of the gas. (c) Find the net change in entropy of the universe.

