

[tex51]Melting or freezing?

A vessel with insulating walls of negligible heat capacity contains 7kg of ice at -20°C . Now we pour 2kg of water at $+30^{\circ}\text{C}$ into the vessel and seal it.

(a) How much ice (in kg) will remain in the vessel when the system is in thermal equilibrium again?

(b) Find the entropy change that takes place inside the insulated vessel.

Specific heat of ice: $c_s = 2090\text{J/kgK}$.

Specific heat of water: $c_l = 4180\text{J/kgK}$.

Latent heat of liquid-solid transition: $L = 3.34 \times 10^5\text{J/kg}$.