

[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: $L = 3.34 \times 10^5\text{J/kg}$.

Solution: