1. A kilogram of a substance gives a T-versus-Q Graph as shown below.
   (a) What are the melting and boiling points?
   (b) What are the specific heats of the substance during its various phases?
   (c) What are the latent heats of the substance at the various phase changes?

Melting Point =

Boiling Point =

Specific Heat as Solid =

Specific Heat as Liquid =

Specific Heat as Gas =

Latent Heat of Fusion =

Latent Heat of Vaporization =
2. A 155-g aluminum cylinder is removed from a liquid nitrogen bath, where it has been cooled to −196 °C. The cylinder is immediately placed in an insulated cup containing 80.0 g of water at 15.0 °C. What is the equilibrium temperature of this system? If your answer is 0 °C, determine the amount of water that has frozen. The average specific heat of aluminum over this temperature range is 653 J/(kg•K).