Latent Heat of Vaporization

Pre-Lab Test 3 (10 Points) **Print Name** _____

Lab Section _____ **Date**_____

Staple your work sheet to this pre-lab test. You are required to show your calculations! Points will be taken off if your work is not neat and well organized. Be sure to print your name on both sheets.

Please note that you do not need an expensive graphing calculator for this course. You are required to have one that does statistical functions and linear regression.

1. An ice cube, weighing 2.05 g, is dropped into an insulated container holding 20.50 g. of water at 22.0° C. The ice melts, absorbing heat from the surrounding water and the system comes to thermal equilibrium. Calculate the final temperature of the water, assuming that no heat enters or leaves the container. (The latent heat of fusion for water at 0.0° C is, 79.7 cal/g , and the specific heat of water is 0.998 cal/g-°C.)

Final Temperature _____

2. An aluminum cube of mass 44.25 g, at 22.3°C, is immersed in a Styrofoam cup filled with LN_2. After 120 sec, 34.50 g of LN_2 evaporates due to the immersions of the cube. Calculate L_v of LN_2 and the rate *R* (calories/second) at which heat from the cube evaporates LN_2. (Note that the 34.50 g evaporated is due solely to the immersion of the cube, and not by heat transferring into the cup from the room.)

L_v = _____

R = _____