ME 201
Thermodynamics

Homework #9 Due Monday 2/20/06

1. A rigid wall container is divided into two regions by a removable wall. One region contains 1 lb_m of kerosene at 100°F, while the other region contains 2 lb_m of kerosene at 150°F. A stirrer is inserted into the container and when the wall between the two regions is removed the stirrer provides a shaft work input of 70 Btu. Determine the final temperature of the kerosene.

2. An ice cube tray containing 0.5 kg of ice is removed from the freezer at -20°C and placed on the kitchen counter. Determine the heat transfer required to

   (a) raise the ice temperature to its melting point
   (b) melt the ice
   (c) raise the resulting water to the room temperature of 23°C

   The kitchen pressure is 100 kPa.