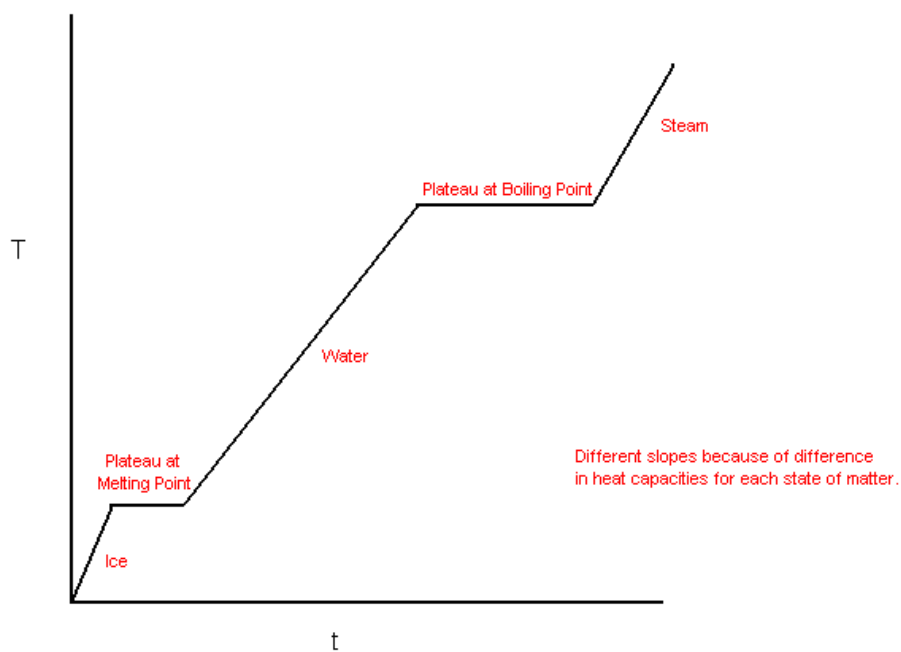## Phase Changes

1. Equation for vapor pressure change with temperature change
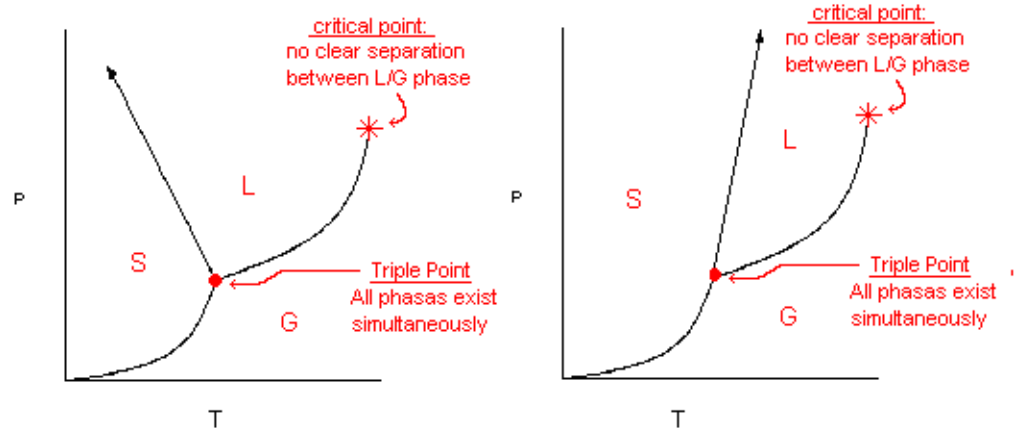
$$\ln \frac{(P_1)}{(P_2)} = \frac{\Delta H_{vap}}{R} \left(\frac{1}{T_2} - \frac{1}{T_1} \right)$$

$$R = 8.314 \; J \; mol \; K$$

2. Label the following heating curve for water:

Steam

Plateau at Boiling Point

T

Water

Plateau at
Melting Point

Different slopes because of difference
in heat capacities for each state of matter.

Ice

t

3. Label the following phase diagrams – how can you identify which is water?

Water has a negative slope between S/L phases because ice is less dense than water. That means that if the pressure is increased (thereby forcing an increased density) water would convert to the liquid phase, as it is the most dense of all phases.