

2. ~~sol~~ <sup>SOL</sup>  $P_1 = 2.64 \text{ Torr}$   $T_1 = 161.2 \text{ K}$

$$P_2 = 0.263 \text{ Torr} \quad T_2 = 146.7 \text{ K}$$

$$\ln \left( \frac{0.263}{2.64} \right) = \frac{-\Delta_{\text{sub}} H}{R} \left[ \frac{1}{146.7} - \frac{1}{161.2} \right]$$

$$\frac{\Delta_{\text{sub}} H}{R} = 3761 \quad \Delta_{\text{sub}} H = 31.27 \text{ kJ mol}^{-1}$$

~~sol~~  
lig

$$P_1 = 11.93 \quad T_1 = 173.15$$

$$P_2 = 55.36 \quad T_2 = 193.15$$

similarly  $\Delta_{\text{vap}} H = 21.34 \text{ kJ mol}^{-1}$

$$\Delta_{\text{fus}} H = \Delta_{\text{sub}} H - \Delta_{\text{vap}} H = 31.27 - 21.34 = 9.93 \text{ kJ mol}^{-1}$$

Ⓜ triple point vapor pressure of lig & sol are the same. Chose points closest to  $T_{\text{triple}}$

$$P_{\text{sol}} = 2.64 \quad T_{\text{sol}} = 161.2$$

$$P_{\text{lig}} = 11.93 \quad T_{\text{lig}} = 173.15$$

← must be between these two.

$$119 \quad \left( \frac{P_{\text{trip}}}{11.93} \right) \quad 8.314 \quad T_{\text{trip}} \quad 173.15$$

$$\text{sol} \quad \ln \left( \frac{P_{\text{trip}}}{2.64} \right) = \frac{-34,270}{8.314} \left( \frac{1}{T_{\text{trip}}} - \frac{1}{161.2} \right)$$

subtract both sides

$$\ln \left( \frac{P_{\text{r}}}{11.93} \right) - \ln \left( \frac{P_{\text{r}}}{2.64} \right) = \frac{-21340}{8.314} \left( \frac{1}{T_{\text{r}}} - \frac{1}{173.15} \right) + \frac{34270}{8.314} \left( \frac{1}{T_{\text{r}}} - \frac{1}{161.2} \right)$$

$$\ln \left( \frac{2.64}{11.93} \right) = -2567 \left( \frac{1}{T} - \frac{1}{173.15} \right) + 4122 \left( \frac{1}{T} - \frac{1}{161.2} \right)$$

$$-1.5 = \frac{-2567}{T} + \frac{4122}{T} + 14.92 - 25.57$$

$$9.25 = \frac{1555}{T}$$

$$T = 168.1 \text{ K}$$

use to find  $P_{\text{r}}$

$$\ln \left( \frac{P}{11.93} \right) = \frac{-21,340}{8.314} \left( \frac{1}{168.1} - \frac{1}{173.15} \right)$$

$$P = 7.64 \text{ Torr}$$