Chemistry 141 Name

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Quiz 7 (20 points) May 6, 2010

All work must be shown to receive credit.

$$ln\left(\frac{P\_{2}}{P\_{1}}\right)=\frac{-∆H\_{vap}}{R}\left(\frac{1}{T\_{2}}-\frac{1}{T\_{1}}\right)=\frac{∆H\_{vap}}{R}\left(\frac{T\_{2}-T\_{1}}{T\_{1}T\_{2}}\right)$$

$$log\left(\frac{P\_{2}}{P\_{1}}\right)=\frac{-∆H\_{vap}}{2.303 R}\left(\frac{1}{T\_{2}}-\frac{1}{T\_{1}}\right)=\frac{∆H\_{vap}}{2.303R}\left(\frac{T\_{2}-T \_{1}}{T\_{1}T\_{2}}\right)$$

R=0.0821 L atm/mol K = 62.4 L torr/mol K = 8.31 J/mol K

1. (10 points) Ethanol has a heat of vaporization of 38.56 kJ/mol and a normal boiling point of 78.4oC. What is the vapor pressure of ethanol at 25oC?
2. (10 points) Argon has a normal boiling point of 87.2 K and a melting point (at 1 atm) of 84.1 K. Its critical temperature is 150.8 K and critical pressure is 48.3 atm. It has a triple point at 83.7 K and 0.69 atm. Sketch the phase diagram of argon. Which has the greater density, solid argon or liquid argon?