Chemistry 141 Name

Dr. Cary Willard

Quiz 10 (20 points) November 23, 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. (12 points) Propane has a heat of vaporization of 19.04 kJ/mol and a normal boiling point of -42.0oC.
	1. What is the vapor pressure of propane at 25oC?
	2. What is the boiling point of propane under the ocean where the atmospheric pressure is 36.0 atmospheres?
2. (8 points) Carbon tetrachloride has a normal boiling point of 350 K and a melting point (at 1 atm) of 250.3 K. Its critical temperature is 556 K and critical pressure is 44.4 atm. It has a triple point at 249.0 K and 0.85 atm. Sketch the phase diagram of carbon tetrachloride. Which has the greater density, solid carbon tetrachloride or liquid carbon tetrachloride?