

(NOTE: Monday, September 3<sup>rd</sup> is Labor Day, and so there is no class on that day.)

WORKSHEETS ARE DUE AT THE BEGINNING OF CLASS ON THE DATE GIVEN ON THE WORKSHEET. LATE WORKSHEETS WILL NOT BE ACCEPTED.

NAME \_\_\_\_\_

Panther ID \_\_\_\_\_

For problems involving calculations you must show your work for credit.

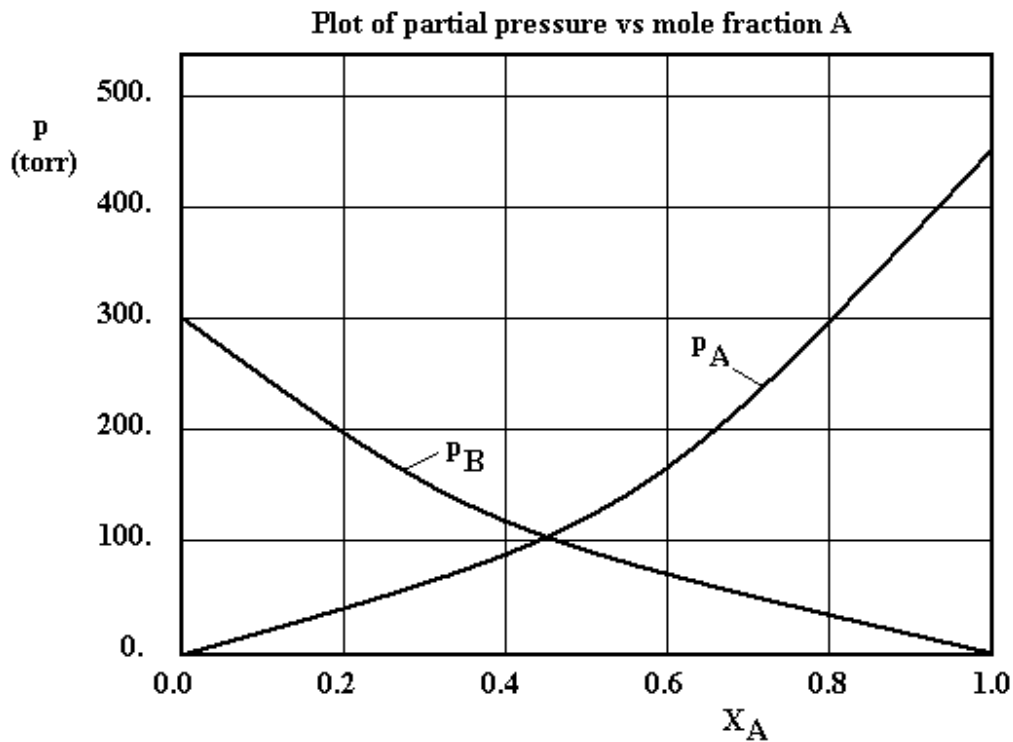
1) A plot of the partial pressure of A ( $p_A$ ) and the partial pressure of B ( $p_B$ ) above a liquid solution of A and B is given below. The plot is for some fixed value of temperature T. Based on this plot, answer the following questions.

a) Do A and B form an ideal solution? Justify your answer.

b) What is  $p_A^\circ$ , the vapor pressure of pure A? \_\_\_\_\_

c) What is  $p_B^\circ$ , the vapor pressure of pure B? \_\_\_\_\_

d) What is the partial pressure of A for a solution where  $X_A = 0.60$ ? \_\_\_\_\_



2) A solution is formed by dissolving 0.186 g of a nonvolatile and nonionizing solid in benzene ( $C_6H_6$ , MW = 78.11 g/mol). The final volume of the solution is  $V = 250.0$  mL. The osmotic pressure of the solution, measured at  $T = 20.0$  °C, is  $\Pi = 47.6$  torr. What is the molecular weight of the solid?

- 3) Which of the following aqueous solutions is expected to have the highest value for normal boiling point?
- a) A 0.100 mol/kg solution of glucose ( $C_6H_{12}O_6$ )
  - b) A 0.100 mol/kg solution of iron III nitrate ( $Fe(NO_3)_3$ )
  - c) A 0.100 mol/kg solution of calcium chloride ( $CaCl_2$ )
  - d) A 0.100 mol/kg solution of sodium bromide ( $NaBr$ )
  - e) Pure water
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