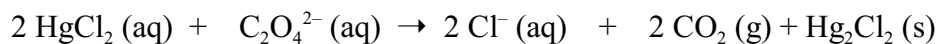


Worksheet 4

1. A dilute aqueous solution of an organic compound soluble in water is formed by dissolving 2.35 g of the compound in water to form a 0.250 L solution. The resulting solution has an osmotic pressure of 0.605 atm at 25.0 °C. Assuming that the organic compound is a nonelectrolyte, what is its molar mass?
2. Using Table 13.4 in the book, calculate the boiling point of 20.0 g of decane (C₁₀H₂₂) in 45.5 g CHCl₃.
3. Consider the following reaction between mercury(II) chloride and oxalate ion:



The initial rate of this reaction was determined for several concentrations of HgCl₂ and C₂O₄²⁻, and the following rate data were obtained for the rate of disappearance of C₂O₄²⁻:

Experiment	[HgCl ₂] (M)	[C ₂ O ₄ ²⁻] (M)	Rate (M/s)
1	0.105	0.150	1.8 x 10 ⁻⁵
2	0.105	0.300	7.1 x 10 ⁻⁵
3	0.052	0.300	3.5 x 10 ⁻⁵

- a) What is the rate law for this reaction? b) What is the value of the rate constant?