

1. A NaCl solution is prepared by dissolving 55.0 g NaCl in 170.0 g of water at 30°C. What is the vapor pressure of the solution if the vapor pressure of water at 30°C is 31.8 torr?
 - a. 28.9 torr
2. The rate constant for a zero-order reaction is 0.54 M·s⁻¹. What is the half-life of this reaction if the initial concentration is 0.33 M?
 - a. 0.31 s
3. The equilibrium constant for the gas phase reaction is $K_{eq} = 3.6 \times 10^{-3}$ at 999 K. At equilibrium,
 - a. reactants predominate
4. Identify the correct statement(s):
 - a. The linear form (plot of $\ln k$ vs. $1/T$) of the Arrhenius equation allows us to calculate the activation energy from the slope and frequency factor from the intercept.
 - b. Between the two energy profiles below, B has larger rate constant.
5. Choose the aqueous solution that has the highest boiling point. These are all solutions of nonvolatile solutes and you should assume ideal van't Hoff factors where applicable.
 - a. 0.100 m AlCl₃
- Calculate both the boiling point and the freezing point (in °C) if 46.0 g of glycerol, C₃H₅(OH)₃ (molar mass 92.09 g/mol), is dissolved in 500.0 g of H₂O. The molal freezing point constant (K_f) for water is 1.86°C/m, and the molal boiling point constant (K_b) for water is 0.51°C/m.
 - Boiling point- 100.51 C